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The Bank publishes from time to time in this REVIEW signed articles by exponents of different theories on questions of public interest. The Bank is not necessarily in agreement with the views expressed in these articles. They are published in order to stimulate free discussion and full inquiry.

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Some Doubts about Sterling Area Policy

By Sir Sydney Caine

THE history of the sterling area since the war has been dominated by continuous but not uniform dollar shortage. It has been a history of recurrent crises, becoming more widely spaced as time has passed but never far enough away to be forgotten. The moments of crisis have perhaps been more clearly manifest in the often frantic and always well-publicized international consultations of governments than in the lives of ordinary citizens; and the cuts in imports normally adopted as the principal remedies have often enough had more impact on stocks than on ultimate consumption. But at all times there have been significant restrictions and controls.

Today it is so long since the last crisis that we can almost wonder if the cycle has been broken by a Government which has had the courage to adopt many of the right measures of internal policy. Nevertheless that Government, along with many independent experts, continues to express a belief in the policies which have become orthodox in post-war thinking, policies of import restriction as short-run palliatives and of export promotion and investment in dollar-saving projects as long-run solutions. It is the purpose of this article to show that such solutions can at best be no more than supports to the more fundamental internal policies and to ask how far the structure of the sterling area helps or hinders the adoption of those fundamental solutions.

THE DOLLAR PROBLEM

First, a word about the meaning of dollar shortage. Impressed by the basic theme of chronic if not uniform dollar shortage, many have come to accept it, and the associated restrictions on trade and the convertibility of currencies, as part of the inescapable facts of modern economic life. Others, perhaps still the majority, who are reluctant to accept these things as permanently necessary evils, have equally come to

believe that the shortage is beyond our powers to cure and that the remedy lies in other people's hands.

Is such an attitude justified? Of course nearly all individuals in the United Kingdom are short of dollars; but they are also all short of pounds too, in that there are many things they would like to buy for pounds if only they had more of them. Nobody, however, talks about the United Kingdom's pound shortage. Why we talk of a dollar shortage is because the public is, or is believed to be, more short of dollars than it is of pounds. It is believed that in the absence of controls the general public in the United Kingdom and other sterling countries would, at current exchange rates, want to spend more of its money on dollar goods or convert more of its cash holding into actual dollars than it is at present allowed to do.

That belief could be tested only by removing the controls. There is strong *prima facie* evidence for its truth, but it may well be that the degree of dollar shortage—i.e. the extent of the public's preference for dollar goods over sterling goods—is exaggerated. It cannot be judged by seeing what happens when an import control is removed which astute traders expect to see reimposed at the next "crisis", so that they stock up while they can; nor is it safe to guess at the possible increased expenditure on individual items and add them all up, since the public might well run out of sterling cash before exhausting its theoretical dollar demands. Dollar shortage is not an unreal bogey but it may be a bit less of a bogey than it looks.

The dollar problem will be better understood and more accurately assessed if we look at the factors which determine a country's external balance of payments. Shorn of all qualifications and temporary mitigations, the dollar balance of the sterling area is identical with the balance of all the members of the sterling area with the rest of the world. By and large, it is only the countries of the sterling area which are prepared to hold unlimited, or even very large, amounts of sterling. Any adverse balance in transactions with countries outside the area has therefore to be settled eventually in something other than sterling: and that means gold or dollars.

The dollar balance of the sterling area as a whole is thus equal to the sum of the net external balances of all its individual members. What, then, determines the external position of the individual countries? This clearly depends upon the

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balance between each country's production, on the one hand, and the amount, on the other hand, which it consumes at home (in the wider sense which includes the use of resources for internal capital formation), plus or minus any net inflow or outflow of capital. The point to be firmly grasped is that it is *only* an improvement in this relationship between production and home consumption, or in the movement of capital, that will be reflected in an improvement of the balance of payments. Neither an increase in production nor an increase in exports will help if accompanied by an equal increase in home consumption. Nor will a cut in imports help if it means that resources that would otherwise be producing for export are diverted to the service of the home consumer.

We are concerned, of course, not with the actual relationship between production and consumption under the existing régime of import and exchange control but with what the relationship would be if there were no such controls. Let us, then, look at the policies most usually advocated as means to the elimination of those controls, and judge them by the test of how far they contribute to the right balance of production and consumption.

The so-called Commonwealth Plan of December, 1952, so far as it can be judged by published statements and "informed" presumptions, apparently comprised most of these alternative policies. The published statement mentioned internal policies for the avoidance of inflation, the right direction of investment and development expenditure, measures aimed at increasing opportunities for sale of sterling products in the dollar area and measures for increasing dollar investment in the sterling area. Unannounced policies were said to include some new international arrangement making increased currency reserves available and, less certainly, a freeing of the dollar-sterling exchange rate and an increase in the price of gold. If we may judge from the communiqué issued after the Sydney Conference of last January no new ideas were developed there, though some difference in the emphasis can be inferred. International trade policy seems to have received a little less attention. Internal policy, though not dealt with at any length, is referred to in rather stronger terms (in December, 1952, it was hesitantly recognized that inflation could "damage the external balance," whereas in January, 1954, "the importance of this part of our task cannot be over-emphasized"). Development policy came more into the centre of the picture.

DOLLAR EXPORTS AND DOLLAR BALANCE

In examining the specific policies already listed it is convenient to begin with those designed to operate directly on the dollar-sterling position—the external policies—and then turn to the internal measures, whose effect is less obvious.

First, what of "dollar exports"? It seems obvious that the sterling area's dollar balance would be improved if it could sell more to the dollar countries and especially to the U.S.A.; but in fact that is true only on the assumption that higher exports will not bring about equal or higher imports. That is a reservation so elementary that merely to mention it may provoke a barely tolerant smile; but it is rarely remembered.

Let us take a quite simple case. The import of British colonial sugar into the U.S.A. is virtually prohibited. If the legal barriers were removed it would be possible to add to gross sterling area earnings of dollars by shipping, say, British Guiana sugar to America instead of to Britain. But (unless United Kingdom consumption of sugar were cut, which is another question) that sugar would have to be replaced from another, and in practice a dollar, source—most probably Cuba. There would thus be no gain to the dollar balance. Indeed, as freight from British Guiana to the United States probably exceeds freight from Cuba by more than the margin between the freight rates from the two countries to the United Kingdom, the net price realized for the British Guiana sugar would be less than the price of the Cuban replacement and there would be a loss on the whole transaction.

This will no doubt be regarded as an extreme, indeed an absurd, example. But though other efforts at increasing dollar earnings by exporting more may be less obviously self-defeating, analysis will show that the position is surprisingly similar in many cases.

In most lines British industries are still working all out. If, through cuts in American tariffs or modifications in American customs procedures or administrative practices, they are enabled to sell more in America it must be largely at the expense of sales elsewhere. If it is at the expense of Commonwealth markets, is it safe to rely on the Commonwealth countries not trying to replace the supplies so lost from outside the area? It is one of the understood rules of the import control game in the sterling area that if "essential" supplies are not available within the

area they can be replaced from outside ; and a large proportion of the goods which might be switched from the Commonwealth to the U.S. are in the essential category.

Even then, there remain some switches of manufactured goods which could be made from the home or Commonwealth markets without replacement by similar goods from elsewhere. But what would consumers do with the spending power then left in their hands ? If they spend it, they are likely either to buy imports or goods that would have been exported, or to make demands on labour and other resources which could be producing for export. Only if people can be persuaded or forced to cut down their *total* expenditure (i.e. if the crucial balance between production and consumption-investment is adjusted in the right direction) will switching from internal to external markets help in the ultimate working out.

Even in the conditions of full employment now prevailing some extra production could doubtless be squeezed out, although only a small proportion of this is likely to be in lines readily saleable in North America. But the extra income generated by that extra production would give rise to an increase in consumption of something like the same order of magnitude, almost certainly involving in its ultimate repercussions extra imports. The stimulation of additional output by the freer opening of dollar markets, like the mere switching of present output, will improve the ultimate position only in so far as it also improves the production-consumption-investment ratio.

Freer imports into the U.S.A. and Canada might also assist the sterling position if sterling goods could then be sold at higher prices in those markets, so fractionally improving the terms of trade. There are cases in which that might happen, but they are not typical. Even if it were to happen, moreover, it has again to be remembered that the extra receipts would constitute additional income in the hands of U.K. recipients and would generate additional imports, so that the net gain would be appreciably smaller than the gross.

In other words, freer imports into the dollar countries will benefit the sterling area balance of payments only if certain conditions are satisfied : Either expenditure in the sterling area must be reduced ; or production must be increased without an equal increase in expenditure ; or higher prices must be realized without the whole of the extra income so accruing being spent. Without attempting a full discussion of how far those

conditions are likely to be achieved, one or two things can be said.

First, the reduction of consumption-plus-investment, so as to make more goods available for export, is a matter for internal policy, especially financial policy. Secondly, additional income accruing from higher export earnings (whether resulting from new output or from higher prices) is the less likely to be matched by additional personal expenditure the higher the rates of taxation. Thirdly, the sectors in which large net increase of output, and also any significant rise in price, might result from more liberal American import policies are probably to be found not in any of the relevant manufactures but among primary products.

Rubber is perhaps the extreme case. If—a very improbable if—the Americans were to abandon synthetic production, the market for Malaya's and Ceylon's natural rubber would increase sharply, and the price might return to Korean heights. The combination of local and U.K. taxation and the financial structure and habits of the plantation companies would ensure that—in the short run—a fairly large proportion of the additional earnings would be saved, so that the sterling area reserves would benefit by still larger deposits of "sterling balances." But, of course, this is a mere dream; American liberality in importing is very unlikely to go that far.

In the main, therefore, the drawing of benefit from any further liberalization of American trade policy and administrative practice depends on internal policies—the old-fashioned policies of sound finance.

There is one last depressing thought to add about trade liberalization. The Commonwealth plan was supposed to be leading up to a world of both convertibility and non-discrimination. In American eyes, the goal is a state of affairs in which American imports will be admitted into sterling area markets no less freely than U.K. and other sterling goods are admitted into U.S. markets. For U.K. manufacturers the removal of the exchange restrictions which have so long protected them from U.S. and other competition is the ultimate price for freer access to American markets. Whether freer trade both ways would cause a net improvement in the dollar-sterling balance must be uncertain. It is unpalatable for a believer in the general virtues of free trade to deny it any particular virtue, and it is greatly to be hoped that the recommendations of the Randall Commission on trade matters, qualified as they are, will be implemented;

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but as the Randall Report itself hints, neither those measures nor bolder ones, if they were possible, would have much effect on the adverse balance of trade in the absence of appropriate other policies.

DRAWBACKS TO AMERICAN INVESTMENT

What of the next item on the published list, more American investment in the sterling area? Obviously, the immediate dollar-sterling position will be improved if a part of a given investment programme is financed by the import of dollars. Provided the investment is economically sound and is made on a business basis, moreover, the long-term position should also be improved, since the true returns on the capital invested will commonly, if past experience is a guide, be higher than remittances of interest or dividends, after local taxation.

But it is not investment of this kind which is commonly in mind when more American investment is discussed. In the first place, it is nearly always new or additional investment, projects additional to those the sterling countries would have initiated without American capital. Secondly, modern thinking (reflected in the statutes of the International Bank and in the practice of American government agencies) assumes that external capital has done its job if it covers the ascertainable "foreign exchange costs" of a project, leaving the "internal" costs to be met from local sources.

If investment calculated on those principles makes possible an additional capital project, local currency expenditure on investment will also be increased above what it would otherwise have been. That additional "internal" expenditure—e.g. on local wages—will, of course, generate additional demand for imports, so that the net effect of the operation will be to worsen the balance of payments.

This doctrine of external capital covering only external costs was unheard of until quite recent times. In the great days of British investment, if a project was to cost £1,000,000, half for capital equipment from the U.K. and half for local wages, etc., the promoters, whether private businessmen or governments, raised £1,000,000 in London, not £500,000. One other curious modern economic belief—that "development" always entails inflation—was also unknown. Naturally, if the local economy is forced to find part of the saving required for the development project, it may often be obliged to do so by

inflationary methods for lack of any other means of generating additional saving by the local population.

A third feature of modern international development finance is the preference for the fixed-interest loan over the equity investment. That is naturally the preference of the big international institutions—indeed, the International Bank can lend on no other terms; but it is also the preference of most borrowing countries, who appear more afraid of seeing the foreign investor earning high profits from a successful enterprise (even though he pays high local taxes) than of incurring fixed (and probably tax-free) liabilities on a complete failure.

Taking these considerations into account, it must be adjudged unlikely, though not impossible, that dollar investment will bring much net improvement to the dollar position of the sterling area. Indeed, there is so much danger that it may worsen the position that it is perhaps fortunate that the prospects of large-scale dollar investment are poor, save in a few highly specialized fields such as oil and metals where the terms of investment are likely to be more old-fashioned and more beneficial. Here also the recommendations of the majority of the Randall Commission are in the right direction but not likely to revolutionize the situation.

Next, what of an increase in the gold price? Most arguments about it are so equally compounded of mysticism and hard realism that a full discussion would be very long. It must suffice here to say that it would be very pleasant indeed for the sterling area if an increased gold price could simultaneously achieve an increase in the dollar value of the U.K.'s gold holdings, an increase in gold producers' incomes without a corresponding increase in their consumption or new investment, and a safeguard against an American recession provoked by a revival of American concern about the gold backing of their currency. Unfortunately, these dreams appear unlikely to be realized. Apart from other doubts whether all these things would actually happen, there is the major improbability of the necessary American action.

It is difficult to wrap up the device of paying a higher price to gold producers as anything but an act of charity by the U.S. and an act of charity benefiting mainly the wrong people in American eyes. The net gain to the sterling area as a whole, or to the U.K., would be only a fraction of the cost to the U.S.A. Recent evidence, including the Randall Report, suggests that Americans are becoming less convinced of their duty to help

other countries, but if they have to do it, they are likely to prefer a method which would ensure the help going more fully and exactly to the countries they most want to help.

NEED FOR LARGER RESERVES

Next are the proposals entirely in the monetary sphere: some new reserve arrangements or a freeing of the dollar-sterling rate. The maintenance of sterling convertibility in a world of trade fluctuations certainly demands very substantial monetary reserves. Large fluctuations in the earnings of sterling area exports must be allowed for. These could, of course, be matched by equally large and rapid fluctuations in the consumption and/or investment of the countries concerned; but such fluctuations are not easily tolerated. Maybe in course of time the basic fluctuations in world demand will be reduced, but it would be imprudent to rely on that. Meanwhile, if we are to have both freedom from exchange restrictions and stability of internal economy, we must have quite large reserves as a cushion against the external shocks.

No one doubts, therefore, that the sterling area reserves must be much larger than they are today if they are to support a bold policy of convertibility and greater freedom of trade. And what matters here is not the crude reserve figure but its size in relation to the liabilities which the U.K., as banker to the area, owes to the other members and to non-members: i.e. the sterling balances. An equal rise in both figures would somewhat strengthen the position, as the proportion of reserves to liabilities would be higher. But only a rise in the reserve figure greater than the rise in the sterling balances can be really satisfactory.

How can such a disproportionate rise in the reserves be secured? The hard way is by the U.K. establishing a net favourable balance on its own account and adding that to the reserves. It is unrealistic to suppose that an adequate reserve—which probably nobody would put at less than five billion dollars—could be built up that way in any short period of time. Some other source of reserves must therefore be sought. It has already been noted that an increase in the gold price could hardly do the whole thing.

More promising lines of thought are a comprehensive revision of the international reserve structure set up through the International Monetary Fund or some direct arrangement with the United States. The recognition given to both

these possibilities, and especially the second, is one of the brightest features of the Randall Report. The reserves available under the existing I.M.F. structure are both much too small and too surrounded with restrictions to meet any significant part of the sterling area's reserve needs. Very large changes in the I.M.F. system and very large increases in the resources at its disposal would be needed. The I.M.F. is a general international body. It cannot do things for one group of countries—the sterling area—which it does not do for others. If, therefore, it were to make a given extra sum available to the sterling countries, the total increase in its resources would have to be a multiple of that sum.

From a purely sterling angle, there would be advantages in a direct arrangement with the U.S. A simple agreement with the Federal Reserve Board or the U.S. Treasury to hold sterling up to some agreed figure might be ideal. It is useless to speculate here about the details of such an agreement, but some general points must be noted. First, whether there were a direct agreement with U.S. authorities or a revision of the I.M.F. system, the resources to provide the new reserves must come solely or mainly from the U.S. No wriggling can escape from that necessity; it is reserves of U.S. dollars that are needed and only the U.S.A. can guarantee new supplies of its own dollars. Secondly, the provision of such resources only as "available" reserves creates no actual burden for the American economy; a call upon real resources develops only if and when the reserves are used—and if they were to be called on in an American recession the arrangement might be a contribution to stability of real mutual benefit. Thirdly, no amount of available reserves will do anything, of itself, to correct a current deficit position; what reserves can do is to give people courage to embark on policies expected to correct the deficit but containing risks of failure. And fourthly, as a consequence of the last two points, additional reserve resources are not likely to be made available without firm assurances of other action designed to correct the basic disequilibrium and render unlikely the frittering away of the reserves.

Increased international reserves must therefore be regarded as a most important prop to a policy for dealing with dollar shortage but not as a substitute for such a policy. Probably they are essential as a support to the right kind of policy; but equally, that policy is essential to persuading those able to provide the reserves to do so.

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A FLOATING POUND ?

Last among the external measures, what of "freeing the pound"? Taken by itself this could certainly correct the situation, but at the risk of very wide changes in general social and economic policies. It would be rational enough to let the dollar-sterling exchange rate find its own level if we are prepared to face the consequences of any new level. Any excess demand for dollars can, in the end, be choked off if dollars are made dear enough. But making dollars dear means making dollar goods dear—and indeed making dear all goods which have a chance of competing with dollar goods or in dollar markets. It means, for example, making wheat and sugar and fats dearer. There would be no point in freeing the exchanges and then protecting consumers from the resultant rise in import prices by reviving the food subsidies. It would also mean making most raw materials dearer and thereby putting up the cost of home-consumed manufactures and of the investment programme.

In other words, freeing the pound means letting the price system work and taking the consequences. The present Government has shown considerable courage in doing something of that sort, but it would be a severe test of its convictions and its strength to let prices rise really substantially if freeing the exchanges were to result in a sharp depreciation of the pound. The danger would be that the transitional problems— increase in the price of necessities, consequential labour troubles, sharp, if localized, increases in unemployment— would lead to a renewal of government intervention, very likely hastily improvised and leading to a situation no better than that of the recent past.

We thus come back to the essential point: that the only true solution lies in the traditional and unpopular remedies of sound non-inflationary finance. It has been said very simply, but very truly, that the basic remedy for the sterling area's dollar shortage is for the sterling area always to be less inflationary than the dollar area. What is required is that the sterling area shall live within its income, shall not try to spend on consumption and investment more than it produces, plus any net borrowings from outside. That is a task for each of the Commonwealth Governments within its own area, a task simple in conception if difficult in political execution. It is too soon to proclaim success, but not only the U.K. Government but most of the other Commonwealth Governments have tackled

the job more seriously in the last year or so ; and the need to maintain these efforts was reaffirmed at the Sydney Conference.

MISGIVINGS ABOUT DEVELOPMENT POLICY

The other main internal feature of the Commonwealth plan was development policy. As already noted, this appears to have received greater attention at the recent Sydney Conference than at its predecessor. Many strands of thought go into the usual discussion of this topic and they need some separate treatment.

While it is hard to quote chapter and verse from the official communiqués on either occasion, the impression is clearly conveyed that investment in the under-developed parts of the Commonwealth is an essential element in a programme aiming at ultimate equilibrium. That such investment, by adding to total output, may eventually make the maintenance of equilibrium easier, is undeniable. But in the short run (and a rather long "short run") increased investment is clearly an item on the wrong side of the balance sheet. Some apprehension must therefore be felt about the prospects held out of more capital being available from London.

Possibly, no more was meant than that, out of the U.K.'s genuine non-inflationary savings, a larger proportion would be devoted to investment in the Commonwealth. Even assuming that to be so, misgivings must still be felt. Post-war thinking about "development," in Colombo Plan discussions and elsewhere, has concentrated far too much on the absolute amount of capital expenditure in under-developed areas and emphasized too little the need for its being remunerative in either the commercial or the social sense. However grand it sounds in international discussion, there is in truth nothing virtuous about spending this or that many millions of pounds on so-called development, or devoting such and such a percentage of the national income to so-called investment. What is praiseworthy is making sure that such expenditure is really worth while. Unfortunately, it is precisely in under-developed countries that it is most easy to waste resources by misinvestment. One must feel doubts about a policy of encouraging still further capital demands on the resources of the sterling area countries. In addition, special suspicions must attach to policies based on *a priori* assumptions that investment in under-developed countries has greater claims than investment in the more developed, that investment at 4 per cent. in the sterling area is somehow better than investment at 10 per cent. outside

it, or that there is a special virtue in "socially significant" investment.

The immediate effect on the external balance of any given investment expenditure is the same whether it is spent on houses or factories, and whether it is spent in Britain or in Asia. The long-run effect depends on how far the investment contributes to increased output of things people want to buy and how far it helps towards a better future balance of production and consumption (e.g., from the point of view of promoting equilibrium, greyhound tracks may be better than houses destined to be let at subsidized rents, because they will mop up more purchasing power). Of course, there are other things to think of in investment policy, but if it is to contribute towards maintaining external balance, two main precepts need to be followed. First, the objects of investment should be judged mainly on commercial criteria, and departures from those criteria be viewed very critically. Secondly, total investment expenditure must not exceed the genuine savings of the sterling area (except, of course, in so far as it is covered by long-term investment from outside it). Once again, the main point is that investment-plus-consumption shall not exceed production.

Granted that sound internal policies are fundamental, we can turn back and ask if there are measures of an external nature which can assist in their implementation. It is easier to pursue a strict policy of living within one's income if that income is high; it is easier also if the income is not subject to sudden change; and it is easier if it is on the whole rising. Some of the external policies proposed clearly contribute to these ends. Greater sales opportunities in America, for instance, must tend to increase, or at least to maintain, incomes. American investment, if properly applied, should increase real income. And the provision of greater international monetary reserves must reduce the fluctuation in the total sums available for expenditure year by year. All these policies are therefore valuable supplements.

DEPENDENCE ON U.S.

But there are other matters of policy, entirely external to the sterling area, which are of greater importance as supplements to sound internal measures. Both the average size and the variability of the sterling area's external income depend enormously on the level of economic activity in the U.S.A. Experience shows that changes in the American national

income are reflected in greatly magnified form in changes in the sterling area's dollar earnings, as is bound to be the case from the character of sterling exports to America.

If the necessary stability in the American economy should not be attained, it has to be borne in mind that the opening up of larger sales opportunities in the U.S. markets would not be an unmixed blessing. It is not at all improbable that the current social philosophy of the U.K. would prefer a rather lower but assured external income to a higher but variable one with the probable consequence of periodical unemployment.

More specifically, a régime of convertibility and non-discrimination might be easier to maintain on the basis of a freezing of American tariffs for ten years than on the basis of their complete abolition tomorrow, without any guarantee against their reimposition in a year's time. It is safe neither for the U.K. exporter nor for U.K. social policy to make plans on the assumption that an American market exists when this could be abolished or drastically reduced in any short period of time. Certainty is more important than liberality in U.S. tariff policy, just as stability is most important in U.S. employment policy. Here it may be noted that the Randall Commission has recognized the importance to other countries of American economic stability but has failed to draw the logical conclusion as to the need for really long-term agreements with the minimum of escape clauses.

Another fundamental matter which bears on the measures necessary to maintain equilibrium is the restriction on the free movement of labour between the nations. Suppose the external balance to be suffering because the exports of a particular industry are falling off: that is, the workers in that industry are no longer producing competitively in the world market. This may be remedied in various ways: the workers in that industry may improve their efficiency or be supplied with better machinery, and again become competitive; they may take a wage cut; they may switch to more competitive kinds of production in the old factories, or move to another part of the country where they can produce more competitively; or finally they can move to another country altogether.

It is the last alternative which has tended to disappear. Before the first world war the strain on the international economic and monetary mechanism created by differences in productivity between one country and another was to an appreciable extent met by the actual migration of labour to

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those countries where the productivity of labour was highest. That procedure, so obviously sensible in economic terms, is no longer freely available; and the correction of international unbalance is correspondingly harder than in the years before 1914. U.S. immigration legislation is the largest factor in the changed situation but it is only the most striking instance of a general growth of obstructions to free movement. It is much to hope, but if that trend could be reversed it would make far easier the adoption of "balancing" policies by individual countries.

MECHANISM OF THE STERLING AREA

Last of all, is the character of the sterling area an asset or a liability in the struggle for equilibrium? It has already been emphasized that the over-all balance of the area is no more than the sum of the over-all balances of all its members. Accordingly, it is important to know whether the inherent forces of the system itself tend to favour or disfavour equilibrium in individual members. Certain characteristics of the area are especially important in this connection. First, it gives to each member at any given moment access to dollar reserves larger than each could accumulate alone; secondly, it distributes over a wider field the restrictions which may be found necessary to correct a deficit; thirdly, the mechanisms on which reliance is placed to check demands on the central reserves lie almost wholly in the field of inter-governmental agreement and intelligent co-operation while, fourthly, the administrative machinery for enforcing common policies so arrived at is very sketchy.

Let us take the last two points first. The reserves of an ordinary member of the area consist of its sterling holdings, of which an unstated proportion can be converted into dollars. These holdings are held mainly in the form of deposits in an account with the Bank of England earning insignificant interest but not liable to fluctuation in capital value like a marketable security. Policies of individual governments about the calls it is wise to make on these reserves are not, therefore, influenced by the possibility of loss of income or capital but primarily by what they think they "ought" to hold in the interests of their own countries or of the sterling area as a whole, modified in some cases by specific agreements with the U.K. Government.

In this, there is nothing comparable to the gradual and pervasive influence which could be exercised under the

old-fashioned gold standard by changes in Bank Rate. The difference in the psychological approach to the use of a (virtually) non-interest-bearing deposit and to the sale of a marketable and interest-yielding security is quite considerable. To a Finance Minister or Treasurer looking for development finance the latter is very much like raising an ordinary loan, whereas the former looks like the cheapest of cheap money. The automatic necessity to count the true cost of the capital being used is removed. It is interesting to speculate what would have been the effect if the bulk of the sterling balances had been funded and turned into marketable securities. Of course, it would have been vastly more difficult to maintain the cheap money policy of the post-war period, but it might have lessened the tendency to run into deficit by the outer members of the sterling area. Furthermore, if running down sterling reserves had meant realizing securities on a market, not reducing a bank balance, the initial effect at any rate would have been that somebody else would have had to use liquid resources to buy the securities; and, if the authorities had then manufactured credit in order to support the market, the true process would at least have been a little plainer.

Two footnotes may be added on this topic. First, although most of the sterling holdings are in a form not subject to market depreciation, they are subject to loss of purchasing power. Any prudent Finance Minister could be excused for concluding, on the basis of recent history, that the longer his country holds its balances the less it will be able to buy with them, so that he may lose in a real sense by not using them. Secondly, a large part of the Colonial sterling holdings is held in the form of marketable securities, and in this as in other respects the influences affecting the Colonial reserve position are very different from those affecting the other sterling countries.

The pressures of the market having been discarded, there remain the resources of administration. The dollar reserves are a particular concern of the U.K., but it is agreed in principle that they are a common concern of the whole sterling area. Yet over most of the post-war period there has been a sharp contrast between the detailed regulation to which the U.K. economy has been subjected and the loose, highly casual and intermittent co-ordination of policies between the U.K. and the other sterling area countries. Nowhere has the contrast been more striking than in the field of investment. It is a very odd "direction of investment" which has strictly limited

"inessential" investment in the U.K. but lent every facility to the remittance of funds for investment in luxury flats in South Africa and milk-bars in Australia; to a large extent, purely profit-seeking investment in the outer sterling area has cashed in on the artificial cheapening of money in London. Opinions may differ whether "socially significant" or commercially profitable investment is the better medicine for the external balance, or the more desirable in the national interest from other points of view; but it is very hard to believe that different rules obtain in different parts of the sterling area.

In practice, the government of each of the self-governing units of the sterling area has been judge in its own case. It has decided both how far to run down its sterling balances and how much to spend in dollars. A good deal has been heard of agreements limiting the release of the war-time sterling accumulations, the so-called blocked balances; but those agreements have been very frequently revised, always in the direction of increased releases, and it is permissible to doubt whether the actual rate of release has ever been significantly lower than would have been chosen by the countries concerned of their own free will. Moreover, in the more recent years the major fluctuations in the sterling balances have been in the post-war, or unblocked, accumulations. Whether the new series of meetings of Finance Ministers are building up a more effective system of co-operation has still to be tested.

Is it to be wondered at if all these circumstances combined—the sharing over the whole area of the consequences of individual extravagance and the absence of either self-regulating mechanisms based on economic incentives or adequate administrative discipline—appear to have constituted an encouragement rather than a deterrent to the running of deficits? It is rather remarkable that things have not been worse.

It is, moreover, to be noted that the sterling area system works unevenly as between different members. The pooling of reserves and the sharing of burdens are sound enough if it is now one member and now another which needs help. It is less satisfactory if in practice some members make unduly frequent call on the reserves because they can rely on others never calling on them at all. In practice, there has been a recurrent tendency to disequilibrium and running down of reserves by the U.K. itself and by the self-governing Commonwealth countries, and a steady maintenance of equilibrium and continuous growth of reserve holdings by the Colonial territories.

These territories have normally since the war had favourable balances. They have accumulated reserves in the form of sterling balances (i.e. have lent money to the rest of the area) to an extent far exceeding the aid received under Colonial development schemes, and they have never allowed their reserves to suffer the sharp fluctuations characteristic of the holdings of other members of the system. Yet in spite of this record they have suffered the same restraints of exchange control and import restriction as the rest of the sterling area. Their monetary systems are models of old-time financial orthodoxy, but they have sacrificed the corresponding orthodox external freedoms just as completely as if they had pursued a more up-to-date expansionist policy. There is a case to be made for either "old-fashioned" or "modern" finance but hardly for getting the worst of both systems.

* * *

To sum up, it is time that those who believe in the sterling area system faced up to some very serious and far-reaching questions. We have to consider whether the sterling area as it has operated recently, instead of being a device which favours monetary stability, may not just as often encourage instability on the part of some of its members by enabling them to pass on some of the consequences to their more stable fellow-members. We have to consider whether the setting up of "development" as an absolute good is not a constant threat both to general equilibrium and to the sound selection of investment projects. We have to consider whether the system does not unnecessarily widen the area of exchange and import controls by imposing these upon countries which taken by themselves would have no need to adopt any such restrictions. We have to consider whether the working of the system has not relied dangerously on the greater internal discipline of certain of its members. And finally, and most important of all, we have to consider whether that support can be counted upon in the future.

SYDNEY CAINE.

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February, 1954.*

How Much Agriculture?

By Sir Ralph Enfield

EVER since the end of the first world war, there has been a feeling in this country that something ought to be done about agriculture, that we needed a change of policy, a new impetus to domestic food production, more consideration of those who work on the land. Many discussions of these problems took place in the 1920's and early '30's; numerous reports were issued, proposals made, legislation enacted. But a shifting and uneasy spirit seems to have presided over these attempts, an uncertainty as to what should be done, sometimes also a conviction that what was being done to meet short-term objectives would prove to be mistaken in the long run. In those early days agriculture was often referred to as the Cinderella of industries. Nor was this merely a name; she was treated as such. As a part of our economic system whose ultimate fate depended, like other industries, on her own economic health and efficiency she was neglected, even despised, and on occasions expected to bear burdens that were not hers. Undoubtedly at that time she *was* the Cinderella, even though there may be those today who would say that in the end, like Cinderella, she has driven to the ball in a golden coach, married the prince, and now sleeps comfortably in a feather bed.

I

THE PERIOD BETWEEN THE WARS

We can look back into this brief period of agricultural history. Prominent in the years following the first world war was the policy of increasing the number of small holdings, for which a preference was given to ex-service men. It was a political rather than an economic policy; and it was pursued with vigour, notwithstanding the misgivings of some at least of those interested in the ultimate welfare of the industry, who were reluctant to see farms of an efficient size divided up into less efficient units, and this at a time when there was a growing tendency for horticultural crops, eggs, poultry and pigs (the chief products of small holdings) to be produced on larger farms. Nor, in a quite different context, were the

authorities fully alive to the agricultural consequences of the deflationary policy of restoring the gold standard. The Agriculture Act passed in 1920 and repealed in 1921 was an example of this. Following upon the Corn Production Act of 1917 it was the first post-war attempt to guarantee minimum prices under statutory provisions. Minimum prices for wheat and oats for the 1921 and subsequent crops were to be fixed in relation to the cost of production. But the heavy fall in agricultural prices, like those of all other commodities, imposed a burden on the Exchequer far greater than had been anticipated, and the Act was repealed.

The years between the two wars were a period of widespread industrial unemployment. Agriculture, it was thought, could at least make some contribution towards absorbing the surplus labour force that industrial conditions during and after the deflation had brought about. This idea persisted in the ensuing years. Prominence was given to the advantages of a policy of land settlement in the Report of the Agricultural Tribunal of Investigation published in 1924 which, amongst other things, made comparison between the percentage of the occupied population engaged in agriculture in Great Britain and the corresponding figures for several European countries—to the great disadvantage of the former. The tribunal also called attention to the declining agricultural population over a period of years and the undesirable drift to the towns.

Similar emphasis was laid upon it in the more ambitious Report of the Liberal Land Committee, 1923-25. This boldly declared that "Great Britain today retains on the land a smaller percentage of its total population than any country has ever maintained in any part of the world at any period of the world's history." Moreover, "it is of striking significance that the number of persons now registered as out of work (1,343,700 in August, 1925) is larger than the total number of persons engaged in agriculture in the whole of Great Britain (1,254,349, Census, 1921)." Was this a tolerable situation in a country with the wealth and resources of Great Britain—with the good climate and rich soil, with the advantages to health and national vigour of the open-air life, with a market at its door for the produce of its farms and confronted, as it appeared, with the highly intractable problem of industrial unemployment?

Public opinion in general—particularly non-farming opinion—gave support to the policy of land settlement and politically it found its strongest champion in the person of Mr. Lloyd George, whose advocacy of it as part of a highly ambitious programme of agricultural reform became one of

the most remarkable features of the latter part of his political career.

It was not until some years later that the economic implication of any such policy began to be called in question. The report of an enquiry organized by the late Viscount Astor and Mr. Seeböhm Rowntree¹ in 1935 bluntly rejected the whole idea :

The examination we have made in the preceding chapters leaves us no alternative but to conclude that the idea of securing a material increase in the agricultural population consistently with the maintenance of the national economic prosperity must be dismissed as chimerical. On the contrary, it must be expected that the agricultural population will continue to decline, for the economic forces that are working in this direction are extremely strong. The small proportion of the population engaged in agriculture is often contrasted with the much larger proportion in other countries. But no country has ever succeeded in inducing this proportion to move in the upward direction and it remains doubtful whether even the countries which are pursuing the most drastic policies of self-sufficiency will succeed in doing so in future.

In the meantime agricultural policy had taken quite a different turn. It was decided to introduce into Great Britain the cultivation of sugar beet—a crop which had not hitherto been grown in this country. It was not suggested that sugar beet could compete with cane sugar, whose costs of production were far lower and which could be transported and stored economically ; but the very fact of our total dependence on imports afforded an argument on grounds of national security for developing a domestic source of sugar supplies, while there were also reasons of a technical kind which supported the proposal. Sugar beet, as well as being a cleaning crop, is a cash crop and therefore a profitable substitute in the rotation for the traditional root crops which had to be fed to livestock. Moreover, it was a very high employer of labour and might for this reason contribute something at least towards the absorption of additional labour into agriculture.

If this had been all, it is probable that the criticism which followed would not have been as severe as it was. But it was not all. Once again, there seemed to be an uncertainty—even a contradiction—in the aims of agricultural policy. The establishment of the sugar beet industry under the British Sugar (Subsidy) Act, 1925, almost coincided with the reintroduction under the Agricultural Wages (Regulation) Act,

¹ *The Agricultural Dilemma*, 1935.

1924, of the statutory minimum wage for agricultural workers, which had been abandoned on the repeal of the Agriculture Act of 1920. Such a dual policy could hardly escape the criticism that the two aims were inconsistent with each other. On the one hand, it was sought to raise the standard of living of the agricultural workers; on the other, to establish a new enterprise in which, by reason of heavy labour requirements, productivity per man was necessarily low. The two could only be reconciled by a subsidy. It was on account of the magnitude of that subsidy that the "Committee on the Sugar Industry of the United Kingdom" under the Chairmanship of Wilfred Green (later Lord Green, Master of the Rolls), appointed in 1934, recommended by a majority that the whole sugar beet enterprise should be abandoned. The recommendation was not, however, adopted.

In the event, the policy was held by many to have been justified on security grounds alone, notwithstanding its cost, since during the second world war home production greatly diminished the shortage of sugar which otherwise might have arisen; it was in fact sufficient to supply the whole of the householders' domestic sugar ration. Nevertheless, the sugar beet problem has remained an example, like that of land settlement, of the kind of dilemma which has for so long beset policy-makers in agriculture: the choice between a policy aimed above all at promoting economic and technical efficiency and a policy of meeting social and political demands, or satisfying some conditions extraneous to the industry itself.

Largely as a result of the world depression, the 1930's saw a major change in policy in the shape of a number of protective devices designed to maintain or raise domestic prices. The Wheat Act of 1932, in some ways the neatest of these devices, introduced for the first time a system of standard prices and deficiency payments. The payments were financed by a levy on flour, but since the proportion of imported wheat and flour was large in relation to home production, the effect on the price of the loaf was very small.

After the Ottawa Conference in 1932 powers were taken to use the drastic protective weapon of quantitative restriction of imports. It was applied in particular to bacon and meat. At the same time producer-controlled marketing boards were established under statutory provisions for milk, bacon, potatoes and hops, the most significant features of which were the powers to hold off the market, or to divert to other uses, "surpluses" that otherwise would have depressed the price, or in the case of hops to limit production.

II

THE WAR AND POST-WAR PERIOD

During the second world war, policy was inevitably dominated by the need for producing as much food at home as possible. It was not, however, merely a question of an all-round expansion. Agricultural production had to be integrated with the import programme, with the food or nutritional policy of the Ministry of Food, with the problem of economizing shipping. The need was to produce crops with a high food output per acre (e.g. potatoes); to produce crops of a kind which, as imports, made a heavy demand on shipping; to have regard to nutritional needs (e.g. protective foods) and to the maintenance of soil fertility.

With the adoption by the U.S. Government of "Lend Lease", it became possible to concentrate on the domestic production of bulky food and animal feeding stuffs, and to rely to an increasing extent on shipments of concentrated foods (largely animal protein) from the U.S.A. Towards the end of the war (1943-44) striking changes in the pattern of output had occurred. Crop acreages had expanded substantially in accordance with these aims: potatoes by 92 per cent., cereals and pulses by 81 per cent., vegetables by 52 per cent., sugar beet by 25 per cent., fodder roots and green fodder by 24 per cent. Livestock, particularly pigs, sheep and poultry, declined.

If this result had the effect of distorting the pre-war distribution of farm enterprises in British agriculture (as, for example, by inducing the production of potatoes on land normally regarded as unsuitable and where costs were high) it certainly achieved its objective of saving shipping space with remarkable success. Taking into account the effects of food rationing, the above changes led to a saving of about half the shipping space previously required for importing food and animal feeding stuff, thereby releasing some 10 million tons per annum for the importation of other war-time requirements. The reduction in imported feeding stuffs alone accounted for three-quarters of this.

Now, with the end of the war what happened? In the post-war period it was no longer shortage of ships but shortage of foreign exchange, particularly dollars, that mattered. It has largely dominated agricultural policy in the last eight years and once again policy has had to give way to these external pressures. Such is the position in which agriculture finds itself today and in the light of which its future has to be planned. But there are other things to be thought of. What was happening in the overseas countries during the past thirty years, particularly those engaged in exporting food to the

United Kingdom? This is important both historically and in forming a judgement on our present agricultural problems.

In these agriculturally young and expanding countries the economic climate was very different from ours. Although all of them suffered a sharp fall in prices in 1920 and 1921, industry quickly recovered and the industrial unemployed, particularly in the United States, were quickly absorbed. Shortage of labour and high labour costs soon became the farmer's urgent problem, both in the U.S.A. and in the Dominions. How was that to be overcome? No one who visited America in the late '20's could fail to be struck by the difference from ours in the outlook both of farmers and the Administration towards the central problem of agriculture—in particular, by the constant pre-occupation of farmers with the problem of raising productivity of labour and of improving efficiency. New machinery and new techniques were welcomed with enthusiasm. Nor could they fail to be impressed by the effective rôle played by the Extension Service (corresponding to our National Agricultural Advisory Service) in promoting these ends.

Output and Productivity

To compare productivity between one country and another is notoriously difficult and in some cases the requisite data are not available. But we can at least quote an example by way of illustration. In 1949, the late Mr. A. W. Menzies-Kitchen of the School of Agriculture, Cambridge, made a detailed comparison of labour use in farms in the Middle West of America, mainly Northern Indiana, and in the Eastern counties of England.¹ This district of America was chosen because, despite certain differences of soil and climate, there is in many respects a fairly close similarity between the two farming areas. In both, the farms "are of medium size, mainly engaged in arable farming, with at least two, or more often three, livestock enterprises on each farm. On balance, production per acre appears to be roughly the same in both areas, the higher yield from maize in the United States being offset by higher yields from wheat, barley, oats and sugar beet in the Eastern counties."

The author went into a good deal of detail in his study of the actual differences in farm practice, which made all the more striking his main conclusion that output *per man* on the American farm was between two and three times as great as in the Eastern counties of England. Moreover, high output

¹ *Labour Use in Agriculture*. University of Cambridge, Department of Agriculture, Farm Economics Branch, Report No. 36, 1951.

in America was of "fairly recent origin." In Illinois, for example, the amount of manual labour required to grow and harvest an acre of maize fell by more than 50 per cent. between 1915 and 1936, the amount per acre of wheat by 80 per cent. and of oats by about 37 per cent. Recently, a similar trend has been shown in the production of livestock and livestock products. Mechanization of course played an important part in achieving the results, but the investigation showed that it was not merely due to the availability of mechanical equipment but also to the way in which it was used. The author concludes: "This high output per man appears in many cases to be the result of technical and organizational practices, many of which could be applied in this country."

This is no more than an illustration. The quantitative results would no doubt not be equally true of the rest of North America, still less of certain other exporting countries which compete in the U.K. market, such as the Argentine, for example, where conditions are different. But it is an illustration of a trend common to these countries and of significance to the U.K. when we are considering, as we have to today, the total cost of maintaining a certain level of British agriculture in competition with imports amounting to roughly half our food requirements. It is also significant historically, in the sense that over a considerable period of years the exporting countries have been freer or less hampered than we have been in the pursuit of agricultural policies directed to progressive improvement in technical and economic efficiency.

In the U.K. the comparable trend was a good deal more complex, particularly since 1939. The idea of expanding employment in agriculture as an aim in itself had in any case by then disappeared from the field of agricultural policy. The objective was now to maximize food output even at high cost, to which all other considerations were subordinated. Undoubtedly, output per man has increased very considerably and very rapidly. Indeed, today, with net output as calculated by the Ministry of Agriculture¹ at rather more than 50 per cent. above pre-war, and with the total labour force approximately the same as pre-war, this is obvious. Nevertheless, the circumstances that have brought it about and the motives behind it have been very different from those in overseas countries. One might list the chief causes as follows:—changes in the composition of the aggregate output, resulting from a number of factors; expansion of the arable area;

¹ The method used takes account only of inputs restricted to farm products (e.g. feeding stuffs) imported from abroad. The net output is the gross output minus these inputs.

cropping directions; increased yields; improvement in grassland, with the consequent raising of the feeding capacity of pastures; mechanization; greater concentration in recent years on the more expensive products of the farm (livestock and livestock products).

Some of these have been dictated by external conditions, such as the limitation of imports, particularly in the case of feeding stuffs; farmers were compelled to produce more at home. Indeed, the replacement of imported by home-grown animal feed has been much the most important single factor in raising the net output. But, as everyone knows, these changes could not have happened had it not been for the injection of financial assistance into the industry by the Government, either by way of direct subsidies or under the system of price control developed during and after the war and eventually incorporated in the Agriculture Act, 1947. By reason of war restrictions and exchange difficulties, agriculture during these years has in one way or another become a highly protected industry.

After all, the main purpose of the Government's financial policy has been to expand marginal output—to induce greater production on marginal land, on marginal farms, to raise marginal yields—and this for the most part has implied greater average costs per unit of output. For this reason the output figure for the country as a whole cannot be taken as a measure of the progress of economic efficiency.

Nevertheless, there can be no doubt that there has been considerable technical and economic progress during these years, that farmers, while conforming to the requirements of an integrated programme of imports and home production, have taken advantage of the opportunity afforded by the conditions prevailing to apply new and progressive techniques and to reduce production costs. Mechanization, the most obvious advance of this kind, has led to great economies in the production of crops.¹ It has been estimated² that the daily ploughing capacity of U.K. farms has increased from something over 400,000 acres before the war to about 1,300,000 in 1952. The capacity for field work other than ploughing has probably increased by a like amount.

The other most notable—one might say revolutionary—technical advance relates to grassland. The campaign for the

¹ Between 1931 and 1948 the number of tractors on farms in Great Britain is stated to have risen from about 1,900 to 233,060; between 1942 and 1948 the number of combine harvesters has risen from about 1,000 to over 5,000 and of potato chain elevator diggers, in the U.K., from 510 to 4,598.

² H. T. Williams, *Changes in the Productivity of Labour in British Agriculture*. Paper read before the Agricultural Economics Society, July, 1953.

improvement of grassland, originating largely with the pioneer work of Sir George Stapledon at Aberystwyth, was started before the war, and its promotion has been one of the major tasks of the National Agricultural Advisory Service. Its aim has been to raise the productivity of grassland and so to enable farmers to carry more livestock on a given grazing area. Its importance lies firstly in the high proportion which land under grass bears to the total area of farm land—in 1939 it represented 72 per cent. (exclusive of rough grazing). Consequently, a comparatively small improvement in the nutritive value of grass spread over so large an area means a considerable addition to our domestic supplies of animal feed. It is important, secondly, because climate and rainfall in this country are exceptionally favourable to good pastures; and, thirdly, it contributes to the reduction of imported feeding stuffs, mostly derived from the dollar area, which recently amounted to half the pre-war tonnage.

From all this it seems justifiable to draw the conclusion that within the present agricultural system, supported as it is by guaranteed prices for the principal farm products and by a certain amount of tariff protection (horticultural products), and expensive as it is to the taxpayer, there has been genuine progress, in some respects striking progress, towards greater efficiency.¹ In other words, the potential competitive position of British agriculture in a free market has been raised, and if we were to imagine the total withdrawal of financial assistance, it may well be the case that, in spite of progress in competing countries, a larger volume of output could be maintained under *laissez-faire* than would have been possible in 1939.

III

THE PROBLEMS OF TODAY

The aims of the present Government in pursuit of the policy of decontrol are to restore a free market while at the same time preserving the obligations to farmers contained in the Agriculture Act, 1947. A compromise has to be struck between the divergent interests of the consumer, the farmer and the taxpayer; a greater freedom of choice is to be given to the consumer, stability to the farmer, while maintaining, indeed increasing, the net output of agriculture.

In this the main instrument will be "deficiency payments" to make good the difference between the market prices and

¹ This seems to be supported by an index of net output calculated (at 1945-6 prices) by Mr. H. T. Williams in which *all* inputs are taken into account. The index shows a substantial rise over pre-war, showing that output per unit of resources employed has increased fairly rapidly.

"standard" prices to be fixed in advance by the Government. What, it might be asked, will be the precise function of these deficiency payments for individual products? In the aggregate they will clearly serve to support the aggregate farm income, as State purchase has done in the past. But what is to determine the composition of the net output of agriculture, changes in which have contributed so substantially to the 50 per cent. increase? Is it to be determined by the compulsion of a free market? Or are individual deficiency payments and the standard prices from which they will be derived to be used to maintain a certain composition, or to resist changes in it which market forces would otherwise tend to bring about?

Whatever the answers to those questions may be—and sooner or later they will have to be answered—the new policy does not differ from the old in its immediate financial objectives. No one will dissent from the view that the maintenance of stability in agriculture is a desirable aim; it promotes efficiency; it gives farmers a sounder basis upon which to make future plans. Most advanced agricultural countries have sought to achieve this objective in one way or another. Moreover, in this country farmers might be said to have a special claim to it. Wages are regulated under statutory provision; the cost of labour is the largest single item of costs in the farmers' accounts. In effect, wages are in the nature of a prior charge on the gross farm income, so that in a fluctuating market farmers' net incomes, after paying rent or mortgage interest and wages, are liable to more highly-gearred fluctuations, obviously detrimental to efficient farm management.

There remains the problem of the maintenance (or expansion) of the present level of production. This surely is financially the heart of the question. The policy followed hitherto has been criticized as being very expensive, and to this point a good deal of discussion has been directed from time to time, even though with a certain sense of helplessness as to what alternative could have been followed. The burden of this criticism is that guaranteed prices, fixed at a level enabling marginal farms or marginal land to be profitably cultivated, have resulted in assistance being given where no assistance was needed. At the beginning of the war when the policy was initiated there were, in various parts of the country, many farms which to all intents and purposes were fully farmed, models of efficient technique, of advanced practice, of energetic management, in which production costs were consequently low. The spread in costs between these top-grade farms and farms on poor soil, cold wet clay, hilly or mountain land, and so on,

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was in any case wide and must have widened even more as a result of the expansion of output. But maximum output was required from them all. Inevitably, a price policy applied equally over the whole field rewarded the low-cost farms to a greater extent than was necessary. In the end, the financial outcome was to raise the aggregate net farm incomes for the country as a whole (before paying income tax) to about six times the level that prevailed before the war—low and inadequate though that was. Had it been practicable to apply a policy of financial assistance in such a way as to give farmers a guaranteed income per acre, for example, instead of a guaranteed price, much the same result might have been achieved at much lower cost to the taxpayer. Moreover, certain consequences, such as the inflation of the market value of farms, might have been lessened or indeed avoided.

Financial Stimulus

The price policy ultimately incorporated in the Agriculture Act of 1947 was really inherited from the *ad hoc* arrangements made early in the war. Then there were compelling reasons for swift action. Farming was in a state of slow decay and immediate steps were necessary to give a new impetus to production. Prices were raised sharply in 1940, with the provision, however, that the Excess Profit Tax was applied to farmers, as in the case of other industries, and continued to be applicable until the end of 1946. It was a rough and ready plan which undoubtedly had its weaknesses, perhaps also its unfairnesses; but in principle it aimed at distributing State assistance in a way that would have the maximum effect in stimulating output.

Other forms of financial aid giving preference to the marginal or high-cost farms have since then been introduced. They include acreage payments (in lieu of a corresponding addition to prices) in respect of certain crops, grants under the Hill Farming Act, 1946, and the Livestock Rearing Act, 1951, each of the latter two being designed to facilitate improvement in "livestock rearing land" of inferior quality.

In a free market, giving greater flexibility and greater freedom of choice to the consumer, it is not going to be easy to fulfil the obligations to farmers contained in the 1947 Act (stability, encouragement to improve technical and economic efficiency) and at the same time to increase production so as to make some further contribution to the solution of our overseas balance of payments problem. There is no single road to the

achievement of these ends, and at the root of it all lies the question of cost.

Who pays this cost? The taxpayer. That is easily said. But an Exchequer subsidy to agriculture must be derived from the taxation of incomes arising out of non-agricultural pursuits: industry, transport, shipping, and so on, including the export industries—our indirect producers of food. So that what is involved is something in the nature of a transfer to agriculture from the earnings of urban industry, with whatever restrictive effect that may have on the latter's efficiency or competitive power. It is clearly a question of the balance of advantage. Nor could the balance be determined except in relation to the methods to be employed to maintain a certain volume of agricultural output—whether it is to preserve the composition of the output more or less as it is now, or to permit a change in the pattern of production so as to bring it more into line with what would be dictated by a freely competitive market. Does the target figure for future production of 60 per cent. above pre-war given in the recent White Paper (Cmd. 8989) imply that the answers to these questions are already known or can be easily forecast? It might be thought that, compared with the basic and essential proposals of the White Paper, if this figure is an attempt to estimate the optimum output it is, to say the least, somewhat hazardous and at this stage premature.

No one can say what the cost of the price support proposals, coupled with other forms of direct assistance, is likely to be. It has been suggested that in future years it might amount to as much as £200 millions per annum.¹ That would be something like two-thirds of the aggregate net income of agriculture. If so, it is indeed food for thought. In any case, it will be the outcome of future decisions. No one is likely to say that agriculture should be allowed to drift back into the condition of slow decay prevailing before the war. Nor is it likely that anyone would dissent from the view that domestic agriculture will continue to be called on in the foreseeable future to make some contribution to the saving of foreign exchange, food imports constituting about a third of our total imports. These are objectives, within limits, which are worth paying for.

Strong fears have, however, been expressed—and they cannot be lightly dismissed—that the prices guaranteed to agriculture, together with direct subsidies, may lead to a mounting and ultimately intolerable burden on the taxpayer. Against this it has been suggested that the support prices in

¹ A figure of at least £300 millions has been mentioned for 1954-55; this includes an element of "consumer" subsidy.

the future should be in the nature of minima, a protection to the farmer from sudden or unforeseen reduction in market prices, but fixed at a lower level than the buying prices of the Ministry of Food under the old régime. This might limit the taxpayers' liability; but the point is that the level at which guaranteed prices are fixed cannot be divorced from the question of the total output aimed at. The immediate objective as stated in the recent White Paper is an increase, not a decrease, in production.

One further point might be considered, namely the selective use of standard prices to influence the composition of the output. If one thing more than another has been demonstrated during and since the war, it is the flexibility of our agricultural system, its ready response to financial and other stimuli in determining the pattern of production. The same would seem to hold good under a system of deficiency payments. In a free market, could these be so fixed as to allow market prices to reshape the output, perhaps at the loss of some marginal production, so as to raise the efficiency of the industry as a whole in terms of its potential competitive strength? It would mean that support prices would in the future be determined in relation to market prices rather than to production costs, as has been the case in the past. The major exception would be milk, the output of which, in so far as it is "planned", is concerned with nutritional needs more than with competitive conditions in the market.

Requirements of National Policy

Thus, on the financial side of future policy we seem to be left with two questions of importance, the first of which is basic. It is the extent to which we still need to rely on an artificially expanded agriculture to diminish our balance of payments difficulties. It is to be assumed that this will be the subject of the closest scrutiny, bearing in mind the inherent imperfections as well as the high cost of a system of all-round price support as a means of achieving this end. The second is the possible future adjustment of standard prices (as well as direct subsidies) so as to influence the composition of the output in favour of the more competitive as against the less competitive products of our farms.

But let us not forget that within the system, involving political and social as well as economic considerations, there are elements in any comprehensive agricultural policy, deeply rooted and enduring, which in their effect are concerned with promoting efficiency, with the conscious evolution of

farming practice in the light of modern knowledge as well as of modern equipment. Less spectacular than the financial problem, they are also less controversial, but on them largely depends the prospect of progressively narrowing the gap between a supported and an unsupported agriculture. In the end, agricultural policy must be related to the optimum use of our total national resources, to the optimum balance between the direct and indirect methods of feeding the nation. If that is so, then the possibilities of narrowing this gap by a continuous reduction in production costs should be an integral part of that policy.

Of such measures the grassland improvement campaign has already been mentioned; it means the more widespread adoption of "ley farming" or "alternate husbandry", the use of new and improved varieties or strains of grass seeds, increased use of fertilizers and other technical improvements. Other examples are the progressive reduction in the incidence of animal diseases, the more efficient use of mechanical equipment, improved marketing arrangements and, lastly, the wider dissemination of technical information. New opportunities will present themselves in the latter field for making use of the large volume of new technical knowledge. So far as governmental assistance goes, this largely falls within the fields of the National Agricultural Advisory Service and the service of the Provincial Advisory Economists attached to the universities and agricultural colleges. It is the farmer who determines the distribution of the various enterprises on the farm and it is the aggregate of farmers' decisions that determines the pattern of national agriculture. So the study of the economics of farm management in the light of advanced technical knowledge must always remain one of the valuable means of helping the efficient evolution of British agriculture, both structurally and in farming practice.

All these are, however, long-term—indeed permanent—features of agricultural development. In the short run, there still remains the basic question of the level of output at which agriculture should be maintained. It is not very many years ago that one of the best known of the farmers' leaders was fond of saying bluntly: "The Government can have as much agriculture as it will pay for" (for himself, he was content to be let alone). The question still remains: how much ought it to pay for?

RALPH ENFIELD.

London.

February, 1954.

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Air Commerce and Air Power

By M. G. Ionides

WHEN people talk of air power as the successor to sea power in the affairs of the world, they have in mind a fleet of merchant aviation playing the same part in relation to the air force as merchant shipping has to naval force. This has not yet happened. Military aircraft still out-number merchant aircraft many times over in every country in the world, whereas with sea power it is the other way round. Most people still think of air power as meaning bombers, fighters and rockets—air weapons—and have not yet fully realized the growing importance of air commerce. Economically and politically air commerce is a goal in its own right; militarily it is an essential ingredient in air power, complementary to the new weapons of destruction, giving us air mobility and a reserve of productive capacity which we shall otherwise lack.

Expanding air commerce is now a practical possibility. We can visualize how it can happen and see a fair place in it for British air power. It will take time, as our policies must recognize. We are only just at the beginning of the air age, only just laying the foundations for our place in it—or rather the place of our children and grandchildren, because it is in that kind of time-span that we must think.

In this article I have tried to trace some of the things which have made the balance between military and merchant aviation go the way it has up till now; to show how recent technical advances have transformed this relationship; and to examine some of the decisive factors, industrial, economic and political, which will determine our future in the air.

* * *

The parallel between air power and sea power is close enough, but in their evolutions they were radically different. Merchant shipping owed its growth to the fact that men had found out how to exploit the driving force of the wind and the carrying power of ships so that they could transport heavy loads cheaply over great distances. Speed was of secondary importance; it was the fact of ability to make the passage by sea that mattered, the ability to extend means of transport into routes formerly impossible. The military application in

terms of sea power in its modern sense was derivative ; armaments were added to merchant ships, turning them into warships.

In the air it was the other way round. The first practical uses of aviation (apart from sport) were purely military. They exploited the carrying power of balloons and the motive force of the wind. It was the commercial use which was derivative : armaments were taken out of bombers to make commercial transport aircraft. Every use of aviation for military purposes was applied with lighter-than-air craft, starting with balloons, long before the first aeroplane flew. Balloons were used for military observation by Napoleon I in 1794 ; they were used by the Austrians for bombing Venice in 1849 ; they were used for an air-lift to evacuate people from Paris during the siege of 1870-71. These first military uses of aviation did not depend on speed, but only on the ability to move in the third dimension. The subsequent steady increase of speed in military aviation was really incidental ; speed was needed only in order to go faster than the enemy—to catch him if you were chasing him, to escape if he was chasing you.

In contrast, speed is the primary attribute of air travel which commercial aviation exploits ; the fact that it is also movement in the third dimension is incidental. It took four years of hot-house growth during the first world war to bring aeroplanes to the point where speed, carrying power and cost brought them into the practical range of commercial use. Surface transport already covered all the routes in the world that mattered, and without superior speed the air could have no commercial advantage. If nature had decreed that aircraft could go no faster than ships, the military applications would have been the same, in principle, as they are now ; but commercial aviation would never have happened.

There are other differences between the origins of merchant shipping and merchant aircraft. The primary commercial purpose of navigation by sea was to carry merchandise from one point to another. The men who went with it were incidental to that purpose. In the first commercial uses of aircraft, on the other hand, the main purpose was to carry passengers ; freight came later. It was to get people to their destinations more quickly, to speed up the pace of business. The consequences of this manner of evolution as primarily a passenger carrying service have an important bearing on our policy for the future, as will appear later.

Although the main commercial use of aviation—air transport—exploits the attribute of speed, there are other commercial uses which derive from third dimensional movement, in which speed is subsidiary. Air surveying, spreading of insecticides and fertilizers, air rescue, are all of this kind. They make use of aircraft to bring man to a point in space where he can use implements carried with him; they exemplify the use of aircraft as tools. This is really the civil version of the military use of aircraft. The helicopter so far is almost entirely confined to uses such as these. As a means of transport it cannot compete with the aeroplane over long distances, while over short distances—where its third dimensional attribute has an obvious application for getting quickly in and out of cities—it is only just beginning to compete with surface transport. As a tool, its commercial uses come from the fact that it can do things that cannot be done by any other means, so that people are prepared to pay for it. The helicopter is still at a stage of development comparable with the aeroplane in its early days of commercial use.

* * *

Until quite recently it was still thought that air transport must always be either an expensive necessity or a luxury—paying extra to save time. Merchant aviation was still thought of as a means of travel born of military aviation, heavily subsidized, justified only because, once fast travel by air had been invented, it must needs be promoted, even if uneconomic.

It followed that the aircraft industry (in this as in other countries) was inevitably regarded as a precarious affair which must somehow be kept going between crises or wars, a nucleus to expand from in time of need by bringing in other industries to help, with a small by-product of merchant aircraft which, industrially and economically, could never be of much account so far as the aircraft industry was concerned. As recently as three or four years ago, many people still thought that a single aircraft factory of modest size could in theory supply the whole needs of the world for merchant aircraft as far ahead as anyone could foresee.

The coming of the gas turbine—and of electronics—has transformed the outlook. A renewed phase of steadily increasing speeds was initiated, guided missiles began to appear, and the operating economics of merchant aircraft entered a new phase of promise. At the same time, complexity of production

methods, of materials, of the whole industrial basis of the industry widened progressively.

These advances have brought to even higher pitch the terrifying power of military aviation and air weapons. But economically and industrially, the result is to bring us to a point where no defence budget we can afford can be enough to do what science has made it possible and necessary that we should do in the way of providing air weapons for our defence, keeping up a reserve of productive capacity for rapid expansion in the event of major war and providing strategic air mobility—a particular necessity with our world-wide commitments.

In merchant aviation, on the other hand, these new developments have opened up, in the last two or three years, the possibility of continuing expansion, self-supporting through commerce. They have given us in this country a special opportunity to capture a very much bigger share.

The balance is changing in another way, too. In the military sphere, paradoxically, where the need for speed is only relative, competition for speed knows no limits; in the sphere of merchant aviation, where speed was the primary attribute to be exploited, we are probably near the useful limit, at any rate for some years to come. The two forms of aviation are beginning to part company.

* * *

The turning point came when it could be predicted with confidence that air travel for passengers and for some types of freight would get progressively cheaper in comparison with surface transport. In earlier days, when the advantage of speed had to be balanced against higher cost, air travel could be expected to settle down to a more or less steady level. But when the advantage of cost comes to be added to the advantage of speed, the way for expansion opens up.

The world's first gas turbine airliner, the Vickers Viscount, flew in 1948 with turbo-prop engines, in which the gases of combustion are used to drive a propellor. The first pure-jet airliner, the De Havilland Comet, flew in 1949. No one doubted that these two aircraft would fly; few realized at the time, and many would not accept, that the gas turbine engine could ever have any genuinely economic future. American opinion had been that it could not. As tests went on it gradually dawned that both the pure-jet (Comet type) and the turbo-prop (Viscount type) would do much more than

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Aviation

just compete with the piston engine type. It became clear—and is now almost universally accepted—that the gas turbine will, in course of time, oust the piston engine for most mainline aircraft.

The gas turbine is only at the beginning of its development. In a recent technical address Air Commodore Banks, lately Principal Director of Engine Research and Development in the Ministry of Supply, said that fuel consumption had generally been cut by 20 per cent. since the early jet engines went into service, and predicted that another 20 per cent. cut would be made in the next ten years. The power output of gas turbine engines is rising rapidly. There are also inherent aerodynamic factors which, with higher speeds, make for improved operating economics of aircraft. As Sir Frederick Handley Page said recently¹:

It was not appreciated for some years that an increase in speed meant increased revenue-miles flown without a corresponding increase in cost. This is due to the fact that, for a given altitude of the aeroplane in flight and for a given all-up-weight to be carried, the drag does not increase disproportionately with speed if such increase in speed is obtained by reducing wing area and keeping the angle of attack of the wings the same, or by flying at a great height—a very different state of affairs from that which holds good in regard to the power required to drive ships through the sea.

In addition, continuous refinements in methods of design and construction, and in metallurgy, are enabling greater payloads to be achieved in proportion to the dead weight of aircraft. Every pound weight saved is a pound off the basic operational weight, and a pound added to payload.

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The technical advances which are making it possible for merchant aviation to expand on a self-supporting basis of commerce, to which no obvious limit has yet appeared, have also created a situation in which it is becoming more and more necessary that this should happen. There are two reasons for this, one technical and the other economic.

Hitherto, military aircraft and transport aircraft have progressed side by side. Many transports have evolved out of bombers and this is still happening. But air weapons are now going forward to forms and speeds which have no nearly foreseeable commercial application. As regards form, it is

¹ In a lecture to the Institute of Transport in May, 1953, on *The Influence of Military Aviation on Civil Air Transport*.

difficult to see any truly commercial use for the guided missile, which is of increasing importance as an air weapon.

The parting of the ways on speed takes a little more explaining. The significance of the jump from the speed of a ship to the speed of the first merchant aircraft travelling at 100 miles an hour or so was very great. The jump from those air speeds to 500 or 600 miles an hour is also very great. But once we have reached such speeds that a man can cross from London to New York in five or six hours, a period well within the span of hours in the daily round which we occupy anyway in rest or sleep, greater speeds will be of relatively less practical advantage to the businessman, the official or the statesman. Their main motive in air travel is to speed the pace of their affairs, and it is doubtful whether halving the flying time over such distances as London to New York from, say, six hours to three hours, will make much practical difference. It may be that truly commercial aviation is only likely to make the next jump—to supersonic speeds—if by so doing the unit costs of transport could be cut, and that does not seem very likely.

Air weapons, on the other hand, are not stopping at these limits. They are leaving transport aircraft behind, and the direct application to air transport of new developments in air weapons is beginning to tail off. There will, of course, be indirect applications, because new metals and alloys, new electronic and other gear, the research which goes into them and the productive capacity they require will have common application.

Financially, it is also coming to be necessary that merchant aviation should expand, on a commercial basis. This arises from an important contrast between air weapons and air transport already mentioned. We are less and less able, relatively speaking, to find money and effort for the air weapons which technical development makes possible; the amount of money we and other nations can afford is governed by economic and political factors, not by the technical possibilities open to us. In contrast, the amount of money and effort the world is prepared to put into merchant aircraft will increase in proportion as technical development makes air travel relatively cheaper. Governments are therefore bound to oblige commercial aviation and the production of commercial aircraft to rely more and more upon their own resources, so that the margin between what is technically possible (and militarily desirable) in the

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field of air weapons and what is economically possible may be made as narrow as possible. There is no money to spare. The possibility of commercially based expansion of air transport, therefore, has in this sense a vital bearing on our ability to keep ourselves equipped with air weapons.

Obviously, the greater our production of merchant aircraft for commercial sale, the bigger our reserves of productive capacity in time of crisis. Commercial aviation can be an aid also to its military parent in research and development. The firm that turns out completed aircraft is partly a constructor and partly an assembler. The typical aircraft constructor makes the airframe in his own works, but he often places out sub-contracts for various parts such as fins, ailerons, wings or even sections of the fuselage (though, of course, all these are to his own design). Into the airframe he assembles engines, electrical, hydraulic and other gear, instruments, air conditioning plant and a vast range of other equipment. He buys the light alloy and ferrous and other non-ferrous metals which go into the airframe from material suppliers.

In other words, he takes a lot of different items from a lot of different firms and puts them together to make, with the airframe he constructs, a complete aircraft. Each of the suppliers of those items, on the other hand, makes one line of goods which he supplies to a lot of aircraft constructors. Each of the separate subsidiary industries—makers of various kinds of equipment and materials—has its own particular field of production and development leading back down the lines to its own field of fundamental research, education and training. The things they make and the basis which supports them contribute to all types of aircraft and air weapons, military and commercial. The bigger their market the more strongly based they will be. In this way, expansion of our markets for merchant aircraft will be a direct contribution to the strength of the many subsidiary industries and therefore a contribution to their work on air weapons.

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It has been said that commercial aviation is now beginning to help our military air strength by providing a reserve of productive capacity against emergency. Simultaneously, it is becoming more and more necessary that this should be so, because it is less and less possible, owing to the growing complexity and specialization of aircraft production, to rely on a rapid turn-over of effort from other industries.

Higher speeds mean higher wing loadings, greater stresses and therefore stronger structures. Weight saving means designing up to the safe stress limits at every point in the structure, which means closer analysis and understanding of stresses at every part. It means also more stringent dimensional limits for machining the parts, not only working surfaces which have to fit, but free surfaces as well, since a tiny excess of required dimension over a big area means extra weight and loss of payload, while a deficiency in dimensions would mean a cut into the safety factor. The higher the speed the more important smoothness of aerodynamic surface becomes, which means greater demands on the accuracy of production processes. Fine surface finish also becomes increasingly important as a factor in fatigue life of metals. Greater efficiency in gas turbine engines leads to higher temperatures, higher stresses. New alloys and new metals with better properties are continually in demand, leading to new problems in production. The family tree which leads back from the complete aircraft through the shops, the design offices, the laboratories, the universities and schools, gets thicker in the trunk and sends out more and more branches and roots.

Forty years ago a man with brains and enterprise, with modest capital, a workshop, a barn and a field stood as good a chance as the next man to lead the world in aircraft design. No one can even begin to work on a modern airliner unless he can command the services of hundreds of technicians and the use of plant associated with design and testing—such as wind tunnels—costing millions of pounds. His work rests on the support of many secondary industries making materials and equipment, each with its own separate backing of fundamental and applied research. Behind the whole structure there lies the network of institutions for education and training for specialists of all kinds coming into the innumerable ramifications of the industry.

This increase in complexity also means that it takes longer to span the gap between the inception of a new design of aircraft or engine and its appearance in service. This lengthening of the time-scale is an inherent consequence of complexity because so many activities of so many branches of so many subsidiary services and industries have to be brought along in harmony, because so many more steps have to be taken now than formerly, and they cannot all be taken together. It is also due to the fact that the sciences and arts of aircraft

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construction are still advancing so fast and new designs break so much new untried ground beyond the frontier of established knowledge. Extrapolations from proved experience take designers into the realms of trial and error where every trial and every error takes up time.

The price we pay for all these advances and the complexity they bring with them is inflexibility. The vast destructive power of modern air weapons gives to an aggressor the opportunity for a lightning knockout blow ; but the greater the destructive power—and therefore the necessary defensive strength—the more complex the industrial structure necessary to sustain it and the more difficult it becomes to expand production for our better defence if the blow should fall.

We can less and less rely upon other engineering industries to be called in to meet a crisis, because they have not the men with specialized training nor the specialized plant. We must build up a reserve of productive capacity in being, as a going concern. This can only be done by commerce, by making and selling all the aircraft we can in every available market.

* * *

So far we have been discussing the technical and commercial reasons why the whole balance between commercial and military aviation, between air transport and air weapons, is changing.

There are also political and strategic reasons. As has been pointed out, air transport started as soon as it became possible to travel at comparatively high speed by air at costs which, though high, could be borne. Its primary purpose was to get men more quickly from place to place so that they could more rapidly do their business. The result was much more than just a saving in time through fast travel. There was a profound—a revolutionary—effect on our whole structure of international affairs. As soon as men could move from capital to distant capital for meetings and return overnight, the national administrations of all countries began to be increasingly tied up with the international structure of councils, congresses with their rafts of committees and executive organizations. The qualitative revolution is nearly completed, in the sense that increase in speed of travel now in sight will not of itself change the pattern of the structure much more. What we now face is a quantitative increase in these international ramifications in politics, administration and business. More and more, the essential structure for the conduct of affairs depends upon

the ability of men to divide their time between desks at home and desks abroad, between meetings here and meetings there. The political importance of air travel—and therefore of the industries that make transport aircraft—is widening.

Conversely, the political importance of military force is narrowing. It is narrowing in the sense that our new atomic air weapons can be used only in a total war of unimagined destructive effect and could not be used at all without precipitating such a war. The political value of these weapons to the nations which possess them—together with the essential concomitant, the industrial ability to make them—is coming to be limited to the sphere of relations between those nations alone. At present, these are only three in number, but to those three nations these weapons are vital. Ability to make them, to use them and to provide protection against them is essential to air power and to influence in this sphere. But air transport is growing much more important as an ingredient in air power: politically, because our structure of administration depends so much more on fast air travel; militarily, because of the need for air mobility to carry "conventional" troops and arms; economically and industrially, because of the technical support and the reserve of productive capacity which only a big sector of commercially financed aircraft industry can give. In so far as military power stops short of the new atomic weapons, it is a matter of men and "conventional" weapons—plus air mobility, which means transport aircraft. In this sense, military power depends more and more on transport aircraft.

Some have expressed doubts whether we can any longer afford the expense of front-rank air power, which implies the means of making, for ourselves, all the air matériel we need for our own supplies, on an adequate level. There was serious talk two or three years ago about "specialization," whereby we should limit ourselves to making fighter aircraft, leaving bombers to America. Certainly, if we had done that we should have thrown away all hope of staying in the front rank as an air power; yet the decision to continue to cover the development and production of the whole range of air weapons does not of itself put us or keep us in the first rank. Technical excellence is not enough. There must be volume as well.

There are some industries which tend naturally to spread from country to country. These are well typified by textiles, by boot and shoe industries, cement and others. They are industries which nowadays even relatively under-developed

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countries can set up for themselves. They usually have to buy the plant from the more advanced industrial countries and may have to employ a few technicians to look after the plant. But the mass of the manpower they require can be found locally. As time goes on, these industries get more and more widespread; they might be called "divergent" industries.

Aircraft construction is probably an industry which tends in the opposite direction, a "convergent" industry in the sense that fewer and fewer nations will be able to compete in it. Science enables these industries to reach higher and higher peaks of achievement as the years go on. They get more complex; they require an ever widening range of specializations in the workshops, in the testing establishments, the research laboratories and in the system of education and training. The base of the industrial pyramid required to reach the technical heights which science makes practicable must expand as the pinnacle rises. In this country, we have reached the point where the necessary industrial base has widened so much that no defence budget we can afford could provide it, at any rate when it is also taken into account that we must have air mobility and that reserves of productive capacity can less and less be looked for in other industries. We can succeed only if our commerce in aircraft of all kinds comes in to take an increasing share of the burden.

At the same time, since air transport is of growing political and strategic importance, our work on transport aircraft is something much more than a support or stand-by for our armed air force; it is a political and strategic arm in its own right. We have a good start, owing to the foresight which led aircraft firms to put big stakes on the commercial success of gas turbine merchant aircraft and to the steadfastness of successive post-war Governments in backing them. It has meant a large national investment, and commercial aviation is not yet fully self-supporting. But whenever the amount of that investment is questioned, it is worth remembering that without it we should have lost all chance of earning that expanding commercial support for our aviation industries which is indispensable to our survival as an air power.

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So far this has been a qualitative discussion. We need now to give it some quantitative expression, in three stages: first, the size of the aircraft industry in manpower, how it has

varied and how it compares with other countries; second, how the balance between commercial work and military work on Government account has gone in recent years; third, how the prospects look for the future.

At the peak of production in the second world war there were about 1,800,000 people in the aircraft industry—that is to say, people making things identifiable as parts of aircraft. In the early part of 1950, before the Korean war, the corresponding figure was about 180,000, one-tenth. It is now (March, 1954) something over 300,000 (the official statistics published every month exclude makers of equipment and sub-contractors and are therefore smaller). The American aircraft industry is several times larger—perhaps two and a half or three times as large—but exact comparison is impossible because the statistics are differently based. Russia must be comparable with America if production rates assigned to her by Western spokesmen are correct. The Continental countries of Western Europe between them muster something under 100,000 engaged on aircraft construction all told, with France contributing the largest share.

The relation between our industry's work on home defence production and export is broadly illustrated by the following table :—

| Financial years ending March 31st | Estimate for Aircraft and Stores, R.A.F. and Navy £m. | Exports Aircraft and parts thereof £m. |
|--------------------------------------|--|---|
| 1947/48 | 54 | 28½ |
| 1948/49 | 46½ | 28 |
| 1949/50 | 61½ | 34 |
| 1950/51 | 66½ | 36½ |
| 1951/52 | 95 | 41½ |
| 1952/53 | 127½ | 47 |
| 1953/54 | 158 | 67½* |

* April to January converted to annual rate.

Of course, there are items of defence expenditure within the aircraft industry which do not appear in the second column, and there are commercial items in addition to exports,

i.e. sales to the home civil market, but the table indicates the balance reasonably well.

During the post-war years before Korea, the industry was making great efforts to boost exports, though in those years the export of gas turbine airliners had not yet begun. Exports were very largely of service aircraft. Even then, however, commercial work was already contributing a very substantial support to our air power, and a valuable reserve of productive capacity which stood us in good stead when the Korean war broke out. Commercial work was virtually frozen, at its then level, except for service aircraft to our closer allies and Dominions, so as to free resources for air weapons. In fact at one time it was even in question whether we could spare the men and resources to go on with our new gas turbine airliners. It is only a couple of years since the green light was given to open up again on commercial work, and the export figure for 1953 shows only the first beginnings of deliveries.

In addition, supplies to our own airline Corporations and to our independent operators add increasingly to the commercial side, not shown in the table. These Corporations and operators are the direct measure of our own air mobility and are of special importance to us because R.A.F. Transport Command has been almost squeezed out by the necessity to devote every possible penny to air weapons—evidence that our defence budget can no longer of itself sustain all the necessary elements of air power.

Progress in the order book for gas turbine airliners is shown in the table below:—

| Year | Orders placed during the year | Cumulative total |
|------|-------------------------------|------------------|
| 1948 | 14 | — |
| 1949 | 27 | 41 |
| 1950 | 20 | 61 |
| 1951 | 24 | 85 |
| 1952 | 47 | 132 |
| 1953 | 49 | 181 |

NOTE: These statistics are compiled from authoritative published statements of orders placed.

Up to date about forty have been delivered and the annual rate of production is approaching sixty. Comets and Viscounts are in service, Britannias still in development and with their full market potentialities not yet tested. More advanced types are, of course, being worked on in the design offices all the time.

This is the beginning of our entry into a large and expanding market which has been a virtual monopoly of America since the beginning of the last war. The potential of the market is partly for replacing existing fleets, partly for expansion. The world's airlines (outside the Iron Curtain) have at present upwards of 3,000 mainline aircraft, including both two-engined and four-engined types. The average life is about ten years and each aircraft absorbs, during its life, spares and replacements roughly equal in value to its first cost. Over a span of years, therefore, sales are about double the value of complete aircraft delivered. A two-engined airliner costs, on the average, £200,000 to £250,000, while a four-engined type costs £500,000 to £750,000. Replacement of existing fleets by gas turbine types over the decade represents a bill of the order of £1,000 millions in first cost of the aircraft, with a comparable sum following on for spares and replacements.

Expansion of air transport as a whole offers the other part of the market. Since unit costs of transport are likely to fall relative to surface transport and to create new sources of traffic the prospects of continued growth are bright. Below are statistics of air transport growth through the world as issued by the International Civil Airline Organization :—

| Year | Passenger miles flown (millions) | Cargo ton-miles flown (millions) | Mail ton-miles flown (millions) |
|------|--|--|---------------------------------------|
| 1937 | 876 | n.a. | n.a. |
| 1947 | 11,744 | 187 | 88 |
| 1948 | 12,987 | 286 | 114 |
| 1949 | 14,478 | 390 | 123 |
| 1950 | 16,963 | 518 | 143 |
| 1951 | 21,375 | 602 | 160 |
| 1952 | 24,544 | 623 | 178 |
| 1953 | 28,580 | 700 | 185 |

In the six years since 1947 passenger miles flown and mail ton-miles have more than doubled and cargo ton-miles more than trebled. How the trends will go in the future can only be guessed, but even a modest annual increase will create, over the years, a growing potential market which can transform the balance of our aircraft industry and put it on a sound and broad basis which could not have been thought of even a few years ago.

This is our main opportunity for expanding air strength. Our position in the world as an air power depends, unquestionably, on our success in exploiting it. Orders are coming in as well as could be hoped. It was never to be expected that there would be a sudden rush. Although the ultimate predominance of gas turbine airliners is now almost universally accepted, operators with millions of pounds invested in piston aircraft and stores cannot all make the change at once. Their aircraft have a useful life of about ten years and the period of change-over must be reckoned in a comparable span. By the nature of things our manufacturing competitors will come into the market with their own gas turbine aircraft long before we could possibly capture it all. But the market is large and expanding and if we press on by all the means in our power with the lead we have, real air power is within our reach, broad-based on commerce.

M. G. IONIDES.

London.

March, 1954.

Statistics : Explanatory Notes

U.S. Recession.—The recent downturn in U.S. economic activity is compared, in the charts on page 49, with movements during the previous setback in 1948/9. It will be seen that production has fallen quite as steeply on this occasion ; on the other hand, inventories in January were still very near their peak level, while imports were showing a declining tendency even before production passed its peak.

Industrial Production.—The overwhelming importance of the U.S.A., now accounting for more than half of world industrial production outside the U.S.S.R., is evident from the first chart on page 50. From the second chart it will be seen that Germany's share of total West European production, thanks to the rapid recovery still in progress, is now about the same as before the war.

Japan.—From the first two charts on page 51 it will be seen that the significance of Japan in world trade has declined considerably since before the war—in the first half of last year her exports, in terms of volume, were still only a third of the pre-war level, whereas our own were 50 per cent. higher. The Colonial territories, however, remain an important market for cotton piece-goods from Japan, though recently the Colonies have been buying less from Japan and more from India and the U.K.

U.K. Overseas Trade.—Until the final months of the year exports showed little expansion in 1953, but with imports slightly down on the year the monthly import surplus averaged £55 millions, against £63 millions in 1952. Import costs continued to fall and there was a further improvement in our terms of trade.

East-West Trade.—Trade with Eastern Europe now takes a very small place in the overseas accounts of the Western European countries (first chart, page 53). For the U.K. alone, such trade had fallen last year to less than 2 per cent. of the total, against 6 per cent. in 1938.

Banking Trends.—For some years past, money incomes have been rising more rapidly than bank deposits, so that, by pre-war standards, the money supply is no longer excessive in relation to the national income. The number of items passing through the London clearings rose by a third between 1938 and 1953, while the rising trend of prices is reflected in the money value of the average item cleared.

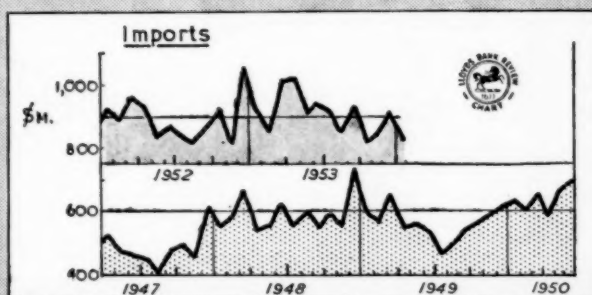
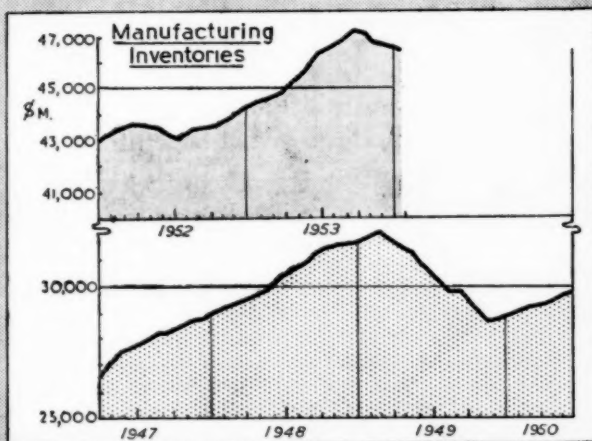
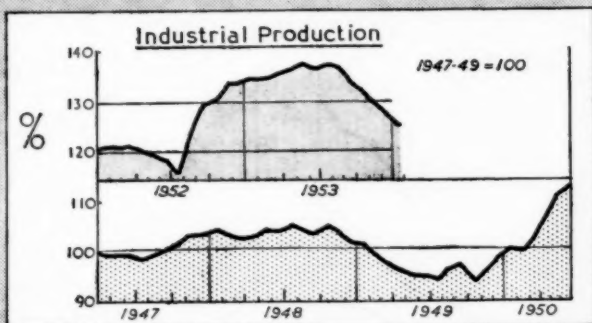
Incomes and Taxation.—Despite the steep increase in rates of tax, the higher incomes contribute a much smaller proportion of direct tax revenue than before the war (page 55). Size of income seems to have little effect on size of family, but the proportion of couples with no dependent children is rather larger in the higher income groups.

Commodity Stocks.—Monthly changes in stocks for a number of important commodities over the past three years are shown in the charts on page 56. The improvement in the position for steel and for softwood, in particular, is especially marked.

Agricultural Trends.—The charts on page 57 illustrate some of the changes, compared with pre-war, touched on by Sir Ralph Enfield in his article earlier in this issue. Production of crops is substantially greater, due not only to an increase in the acreage of arable land but also to higher yields. Meat production has recovered to pre-war levels, while the output of milk has increased by about a third.

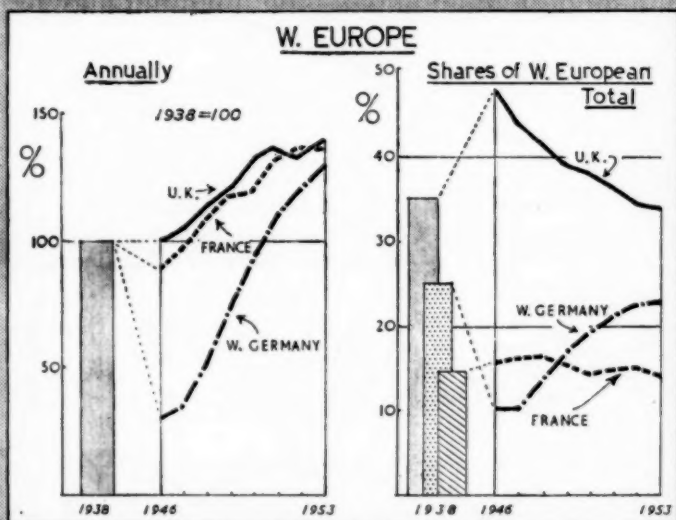
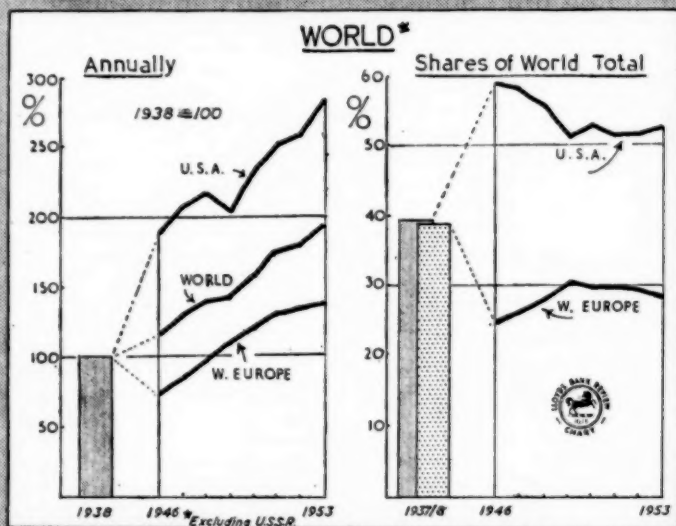
Customs and Excise.—In 1952/3 Customs and Excise duties accounted for two-fifths of the Government's ordinary revenue, a slight increase compared with 1938/9. To the total duties tobacco made the largest single contribution, yielding in 1952/3 no less than 2s. 9d. in every £ of Government revenue, compared with 1s. 10d. before the war.

U.S. RECESSION



SOURCE: Survey of Current Business

INDUSTRIAL PRODUCTION

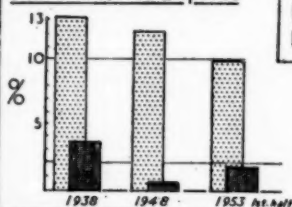


SOURCES: U.N. Bulletin of Statistics
O.E.C. Statistical Bulletin

NOTE: In most cases 1953 figures
are based on less than full year.

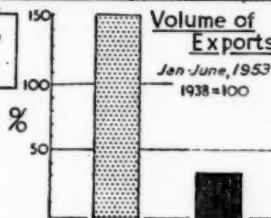
JAPAN

Share of World Exports

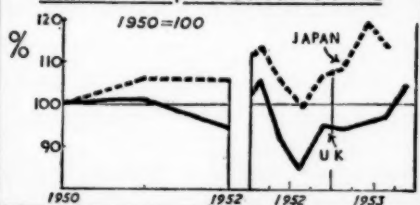


Volume of Exports

Jan-June, 1953
1938=100

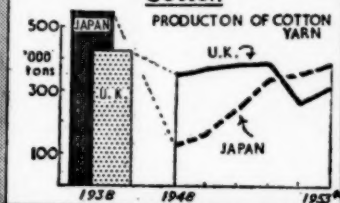


Volume of Exports: Recent Trend

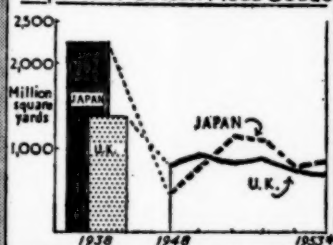


Cotton

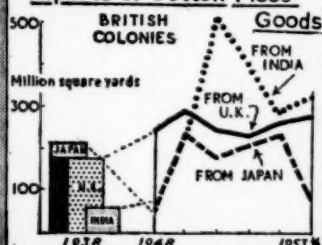
PRODUCTION OF COTTON YARN



Exports of Cotton Piece Goods



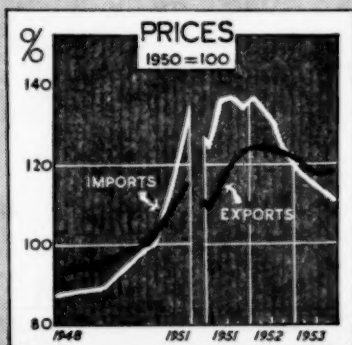
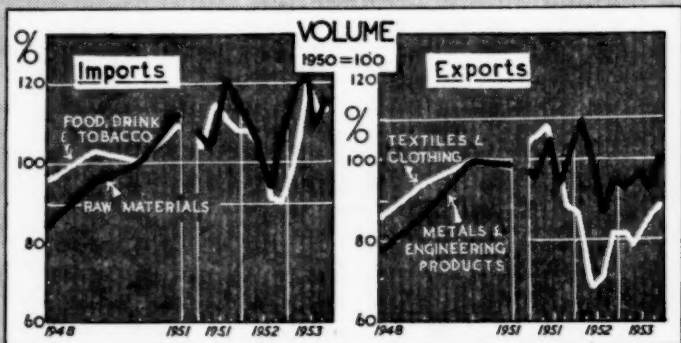
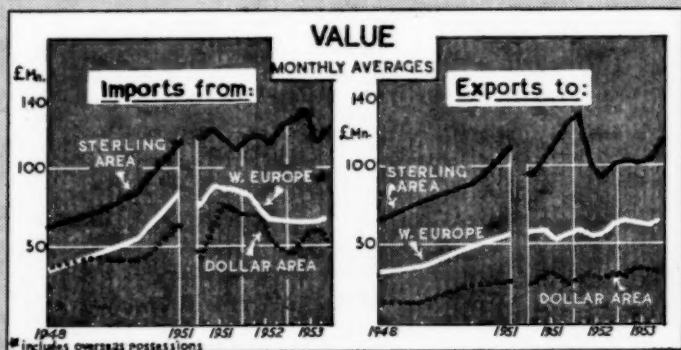
Imports of Cotton Piece Goods



SOURCES: I.M.F. Financial Statistics
U.N. Bulletin of Statistics
Digest of Colonial Statistics

*In most cases for less than a full year.

U.K. OVERSEAS TRADE



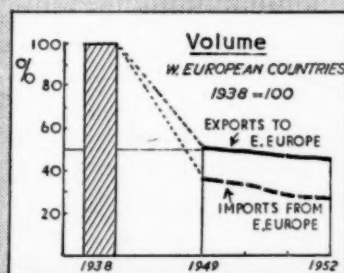
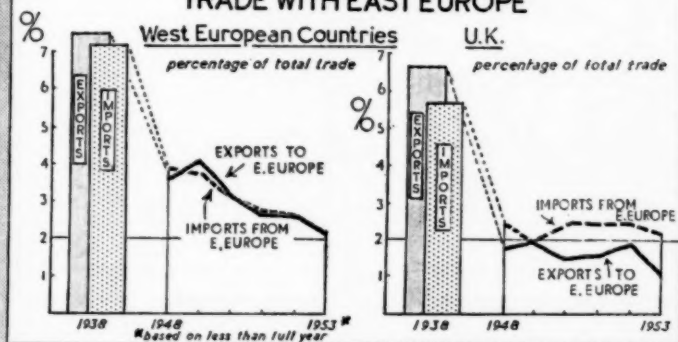
SOURCES: Report on Overseas Trade,
Board of Trade Journal.



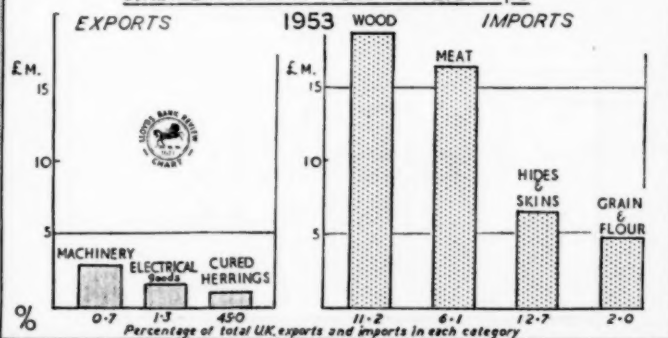
SOURCE

EAST-WEST TRADE

TRADE WITH EAST EUROPE



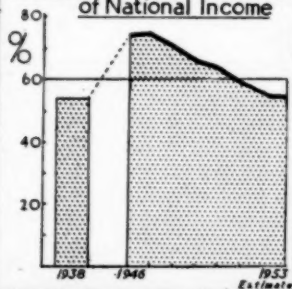
U.K.: Main Items of Trade with E. Europe



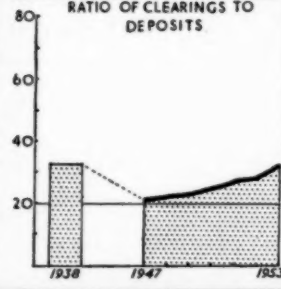
SOURCES: O.E.E.C. Statistical Bulletin
Economic Bulletin for Europe
Trade & Navigation Accounts

BANKING TRENDS

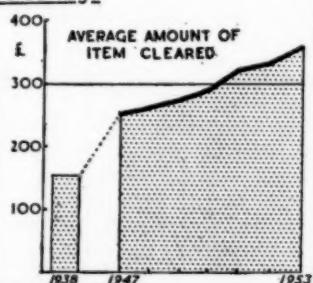
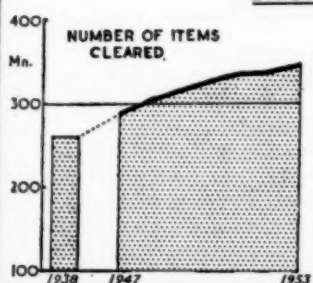
Money Supply as percentage of National Income



Turnover of Bank Deposits
RATIO OF CLEARINGS TO DEPOSITS

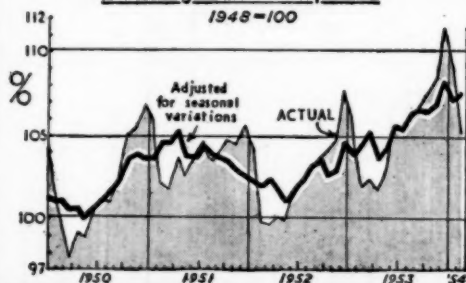


London Clearings



Clearing Bank Net Deposits

1948=100



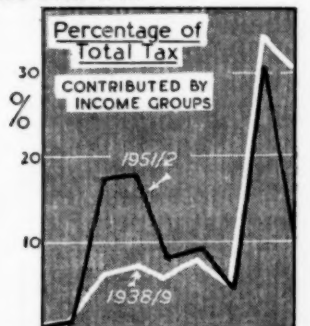
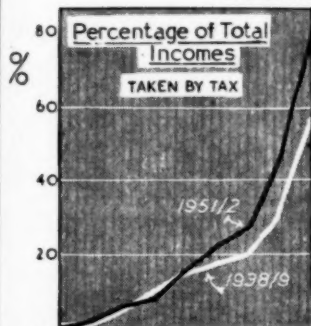
SOURCES: Committee of London Clearing Bankers
Bankers' Clearing House



SOURCE

INCOMES & TAXATION

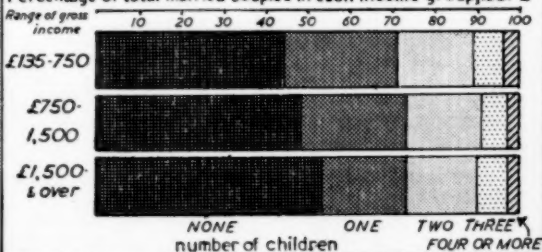
INCOME BEFORE TAX



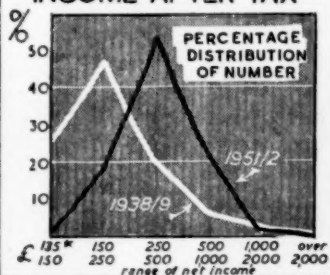
£ 135* 150 250 500 750 1000 1500 2000 over
150 250 500 750 1000 1500 2000 10,000 10,000
range of gross income range of gross income 10,000

SIZE OF FAMILY AT DIFFERENT INCOME LEVELS

Percentage of total married couples in each income group, 1951-2



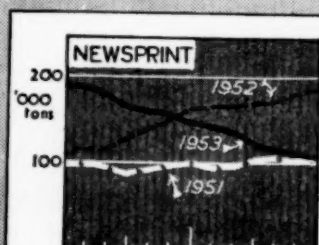
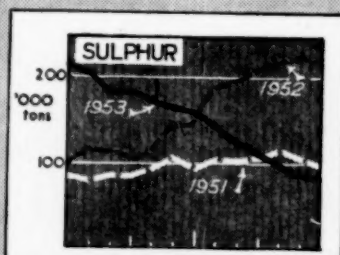
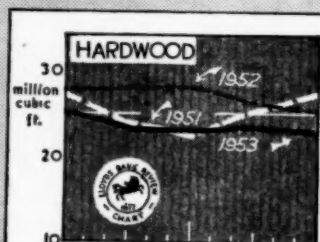
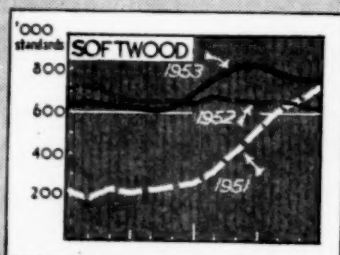
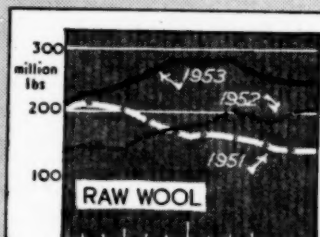
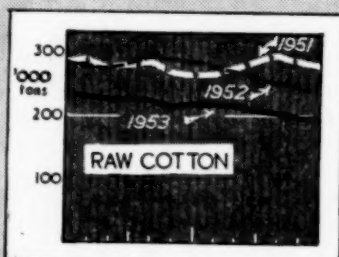
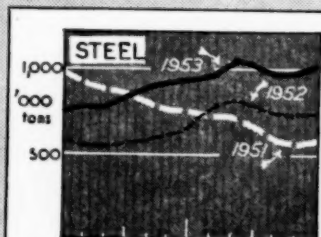
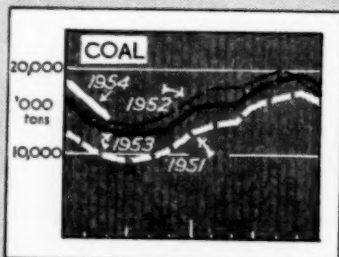
INCOME AFTER TAX



SOURCES: Inland Revenue Reports

*£125-150 in 1938/9

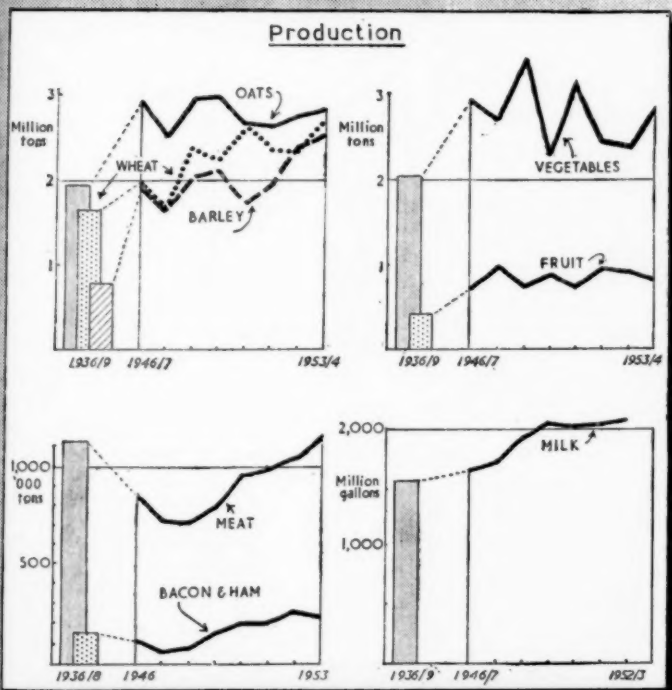
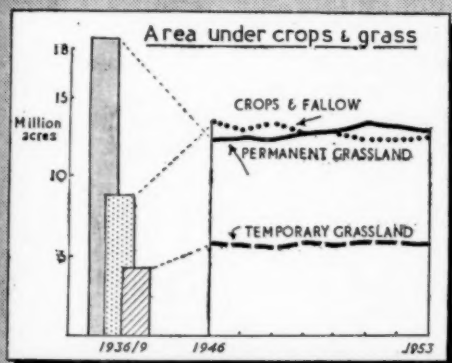
COMMODITY STOCKS



SOURCE: Monthly Digest of Statistics

SOURCES

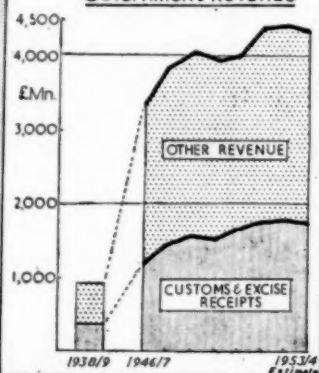
AGRICULTURAL TRENDS



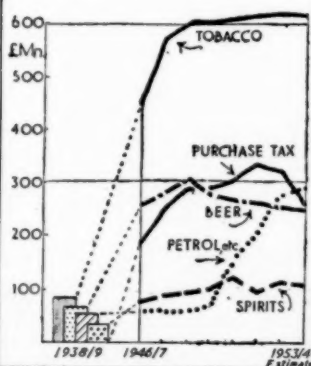
SOURCES: Annual Abstract
Monthly Digest of Statistics

CUSTOMS & EXCISE

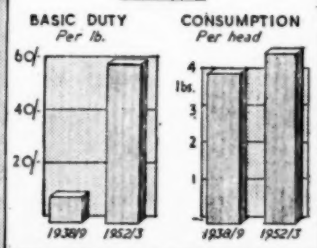
Proportion of Central Government Revenue



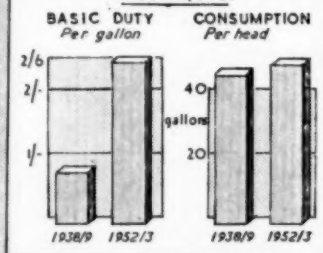
Main Categories



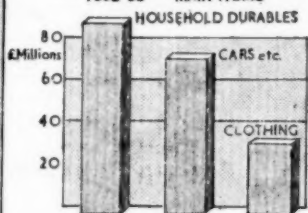
Tobacco



Petrol, etc.



Purchase Tax Receipts 1952-53 MAIN ITEMS



SOURCE : Customs & Excise Reports